FIG. 1

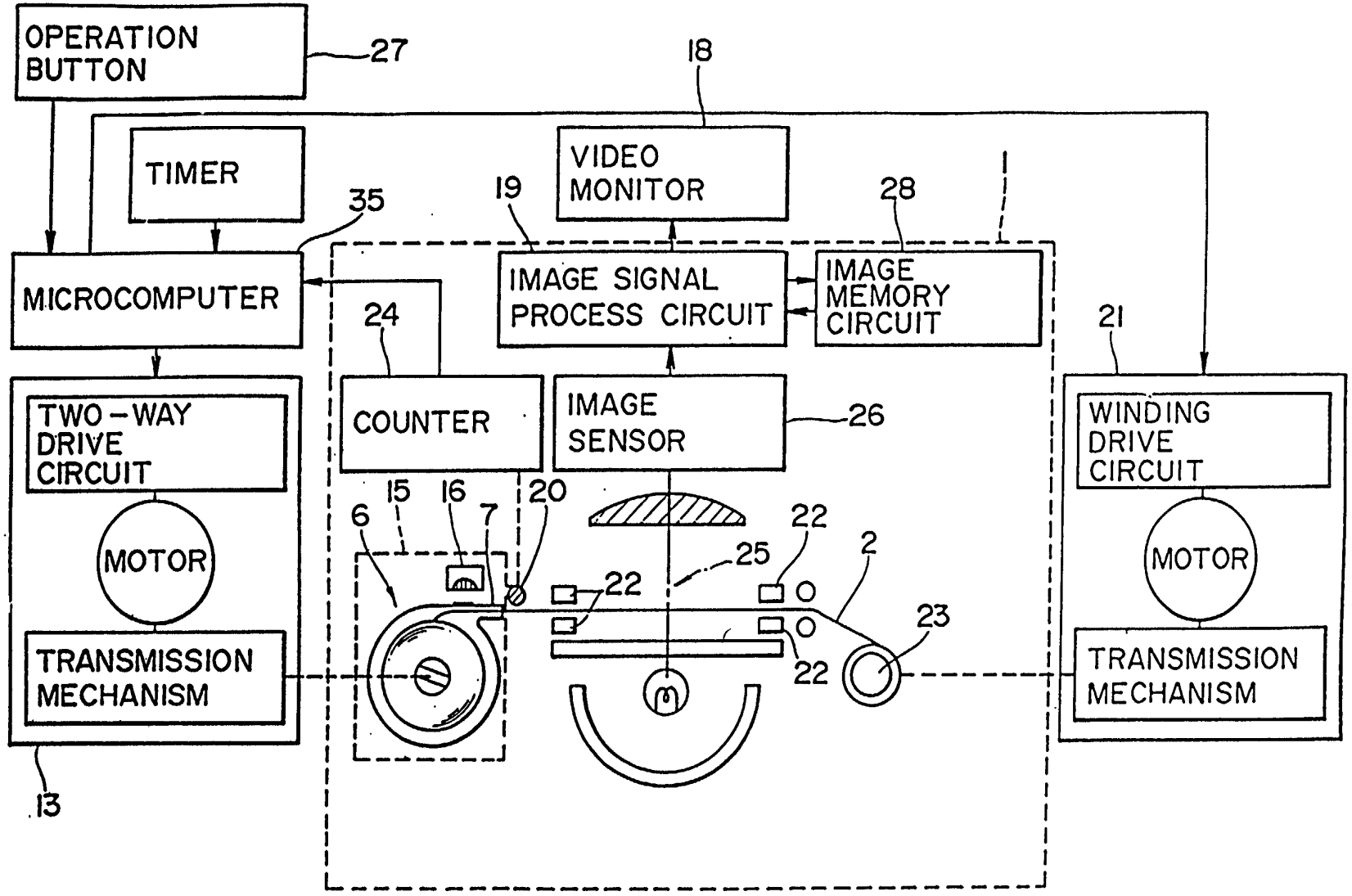

OPERATION BUTTON
27
18
TIMER
VIDEO MONITOR
35
19
28
MICROCOMPUTER
IMAGE SIGNAL PROCESS CIRCUIT
IMAGE MEMORY CIRCUIT
24
21
TWO-WAY DRIVE CIRCUIT
COUNTER
IMAGE SENSOR
26
WINDING DRIVE CIRCUIT
15
16
20
6
7
22
25
2
MOTOR
MOTOR
22
23
TRANSMISSION MECHANISM
TRANSMISSION MECHANISM
22
13

FIG 2

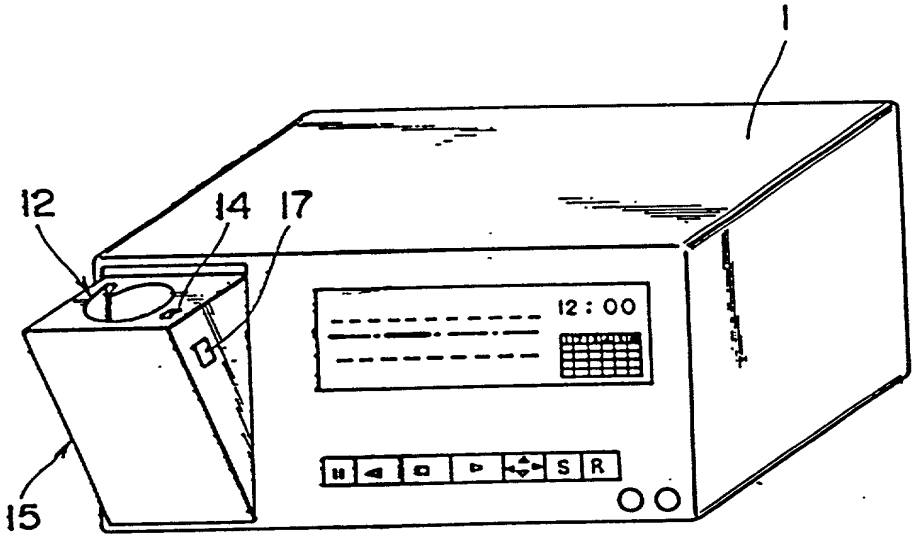


FIG. 3

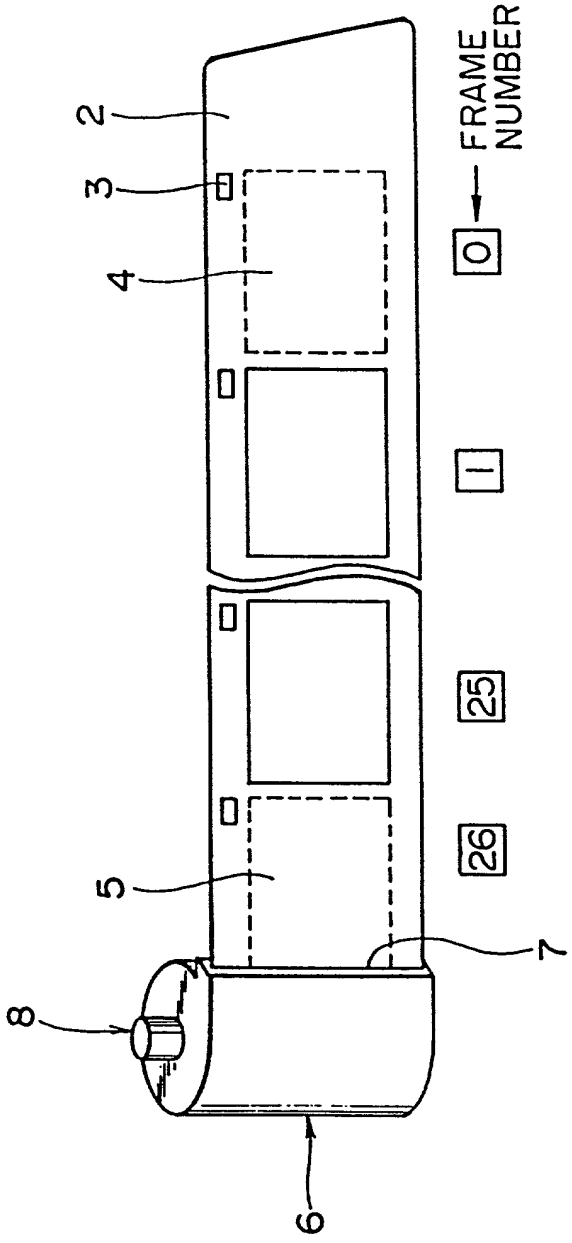


FIG. 4

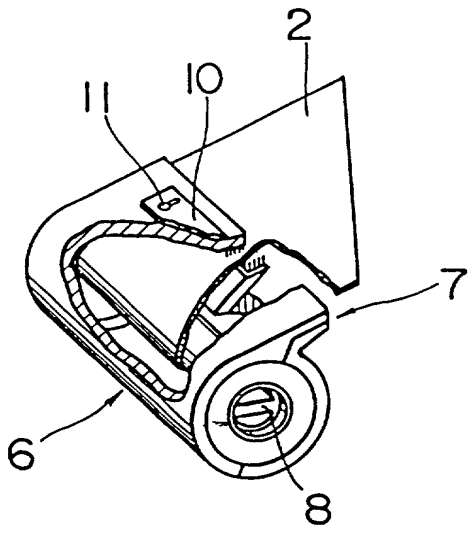


FIG. 5

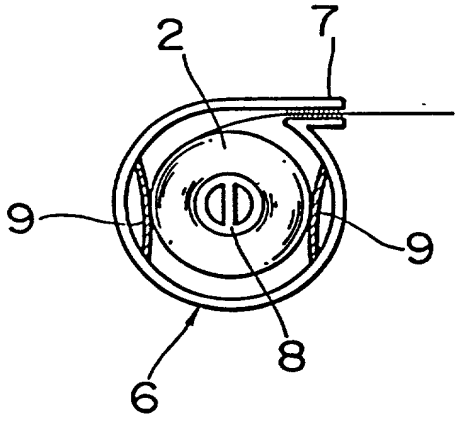


FIG. 6

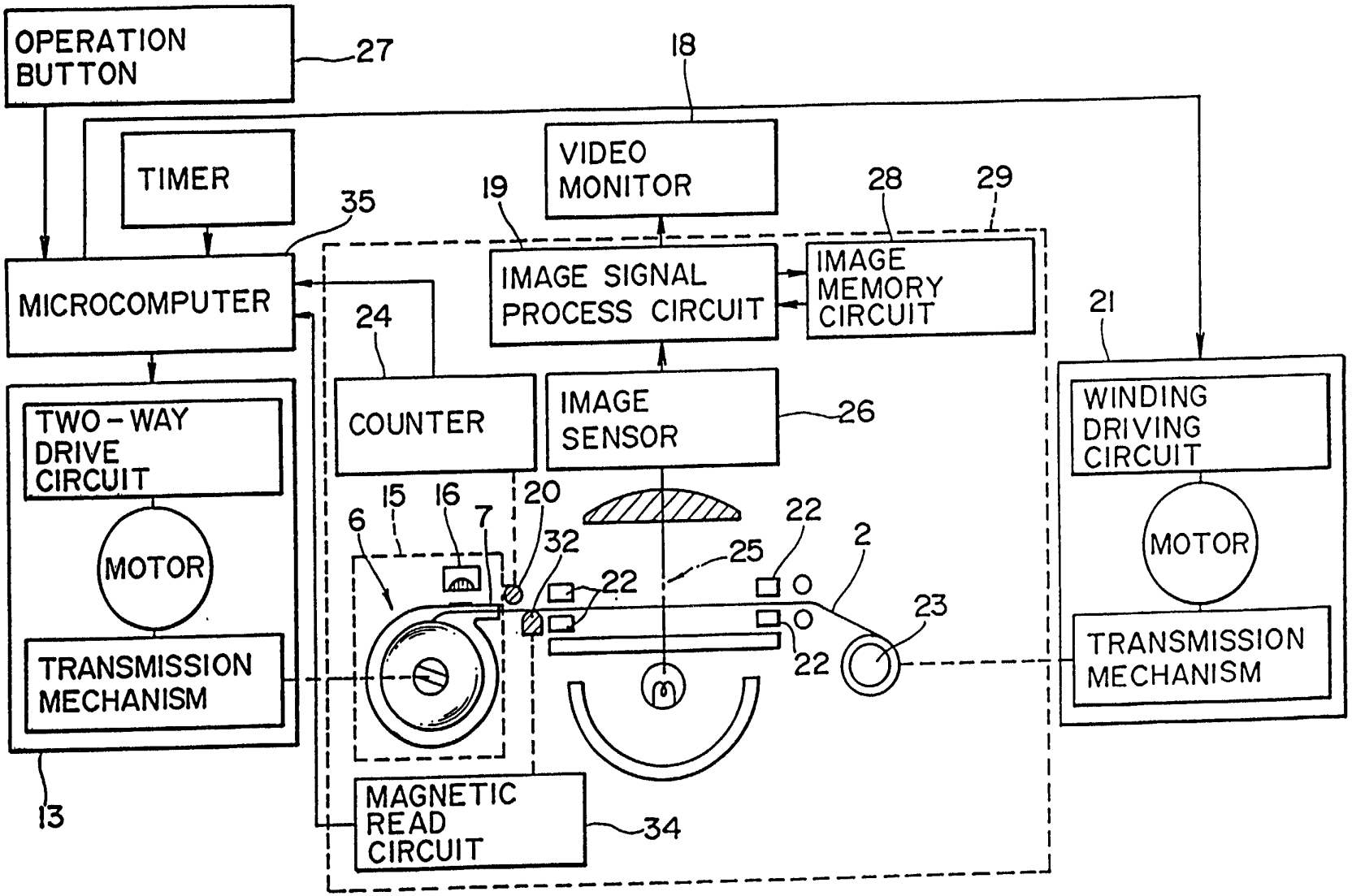

OPERATION BUTTON
27
18
TIMER
VIDEO MONITOR
19
28
29
35
MICROCOMPUTER
IMAGE SIGNAL PROCESS CIRCUIT
IMAGE MEMORY CIRCUIT
24
21
TWO-WAY DRIVE CIRCUIT
COUNTER
IMAGE SENSOR
26
WINDING DRIVING CIRCUIT
15
16
20
6
7
32
22
25
2
MOTOR
MOTOR
22
23
TRANSMISSION MECHANISM
TRANSMISSION MECHANISM
22
13
MAGNETIC READ CIRCUIT
34

FIG. 7

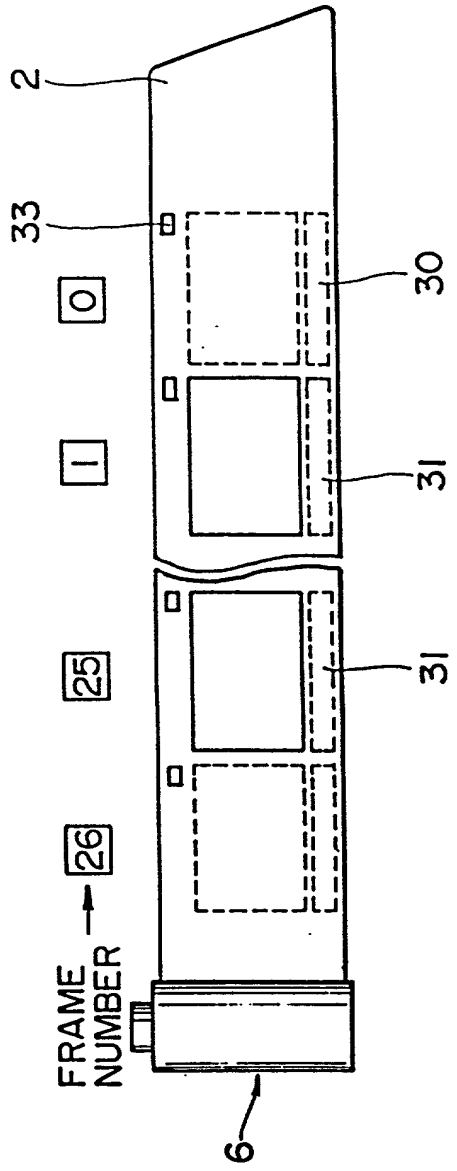


FIG. 8

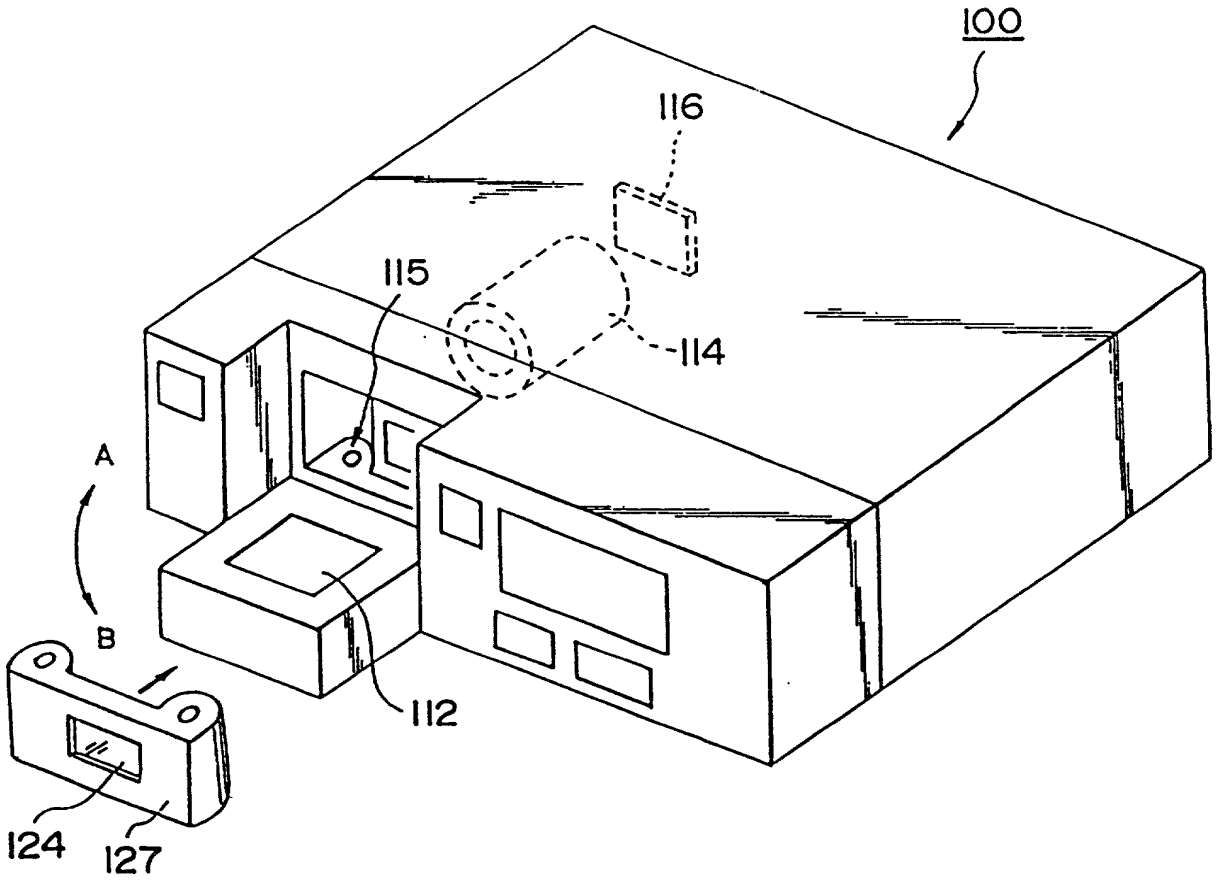


FIG. 9

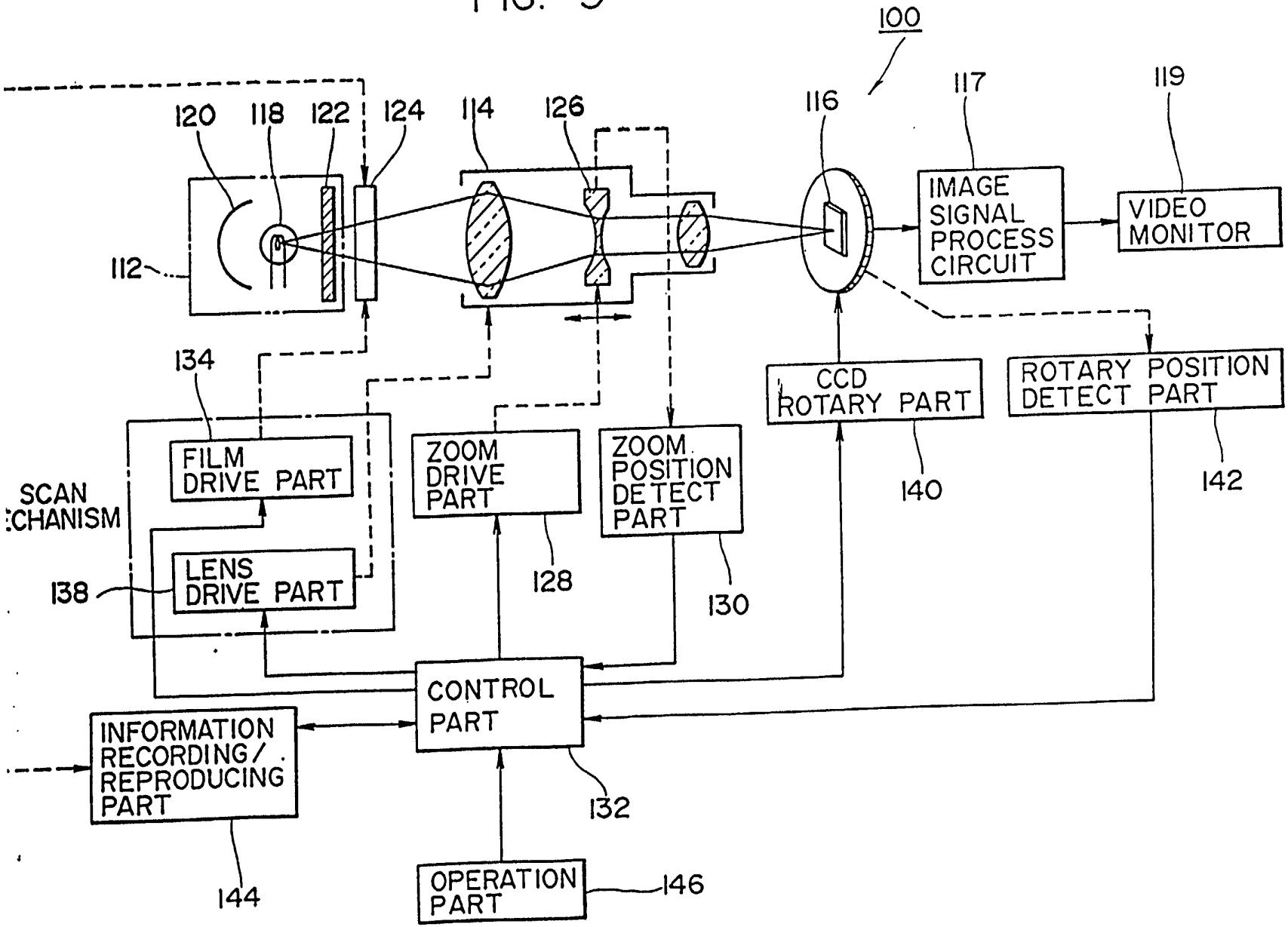

100
120
118
122
124
114
126
116
117
119
112
IMAGE SIGNAL PROCESS CIRCUIT
VIDEO MONITOR
134
CCD ROTARY PART
ROTARY POSITION DETECT PART
FILM DRIVE PART
ZOOM DRIVE PART
ZOOM POSITION DETECT PART
SCAN MECHANISM
LENS DRIVE PART
138
128
130
140
142
CONTROL PART
INFORMATION RECORDING/ REPRODUCING PART
132
144
OPERATION PART
146

FIG. 10

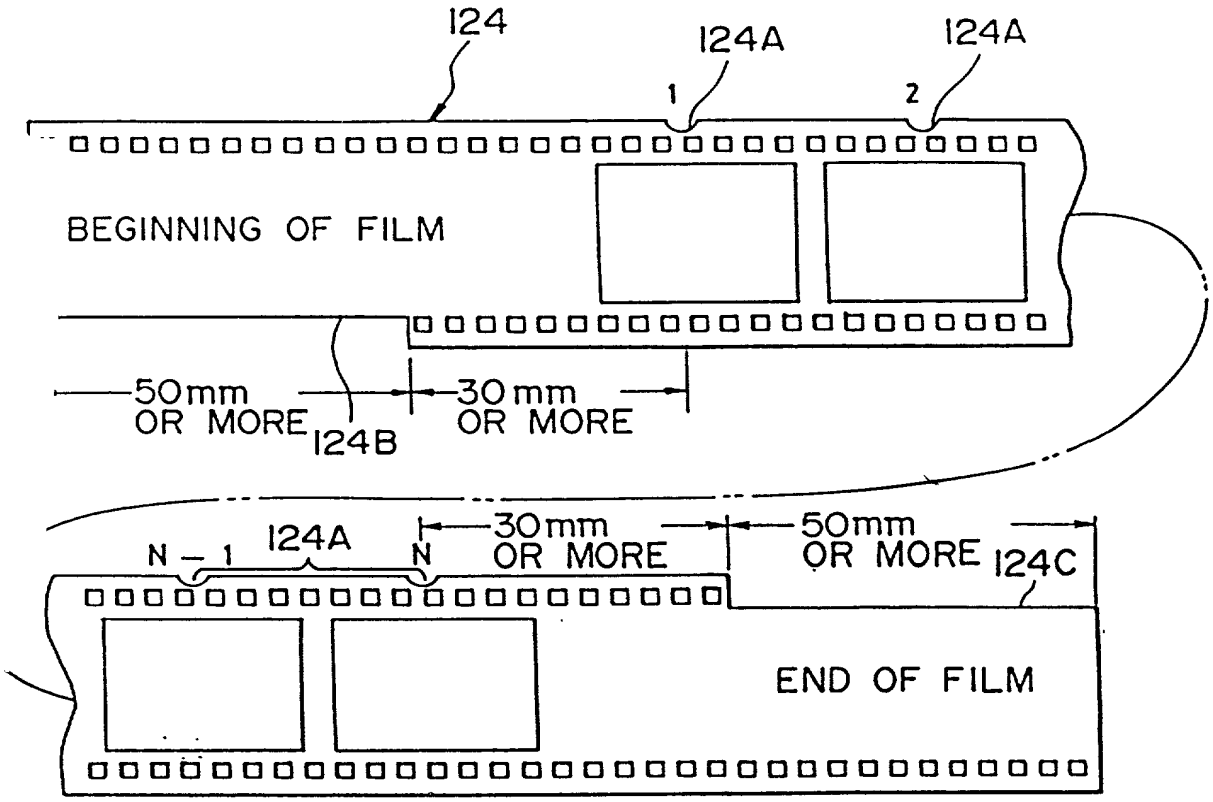

124
124A
1
124A
2
BEGINNING OF FILM
50mm
OR MORE
124B
30mm
OR MORE
N – 1
124A
N
30mm
OR MORE
50mm
OR MORE
124C
END OF FILM

FIG. 11

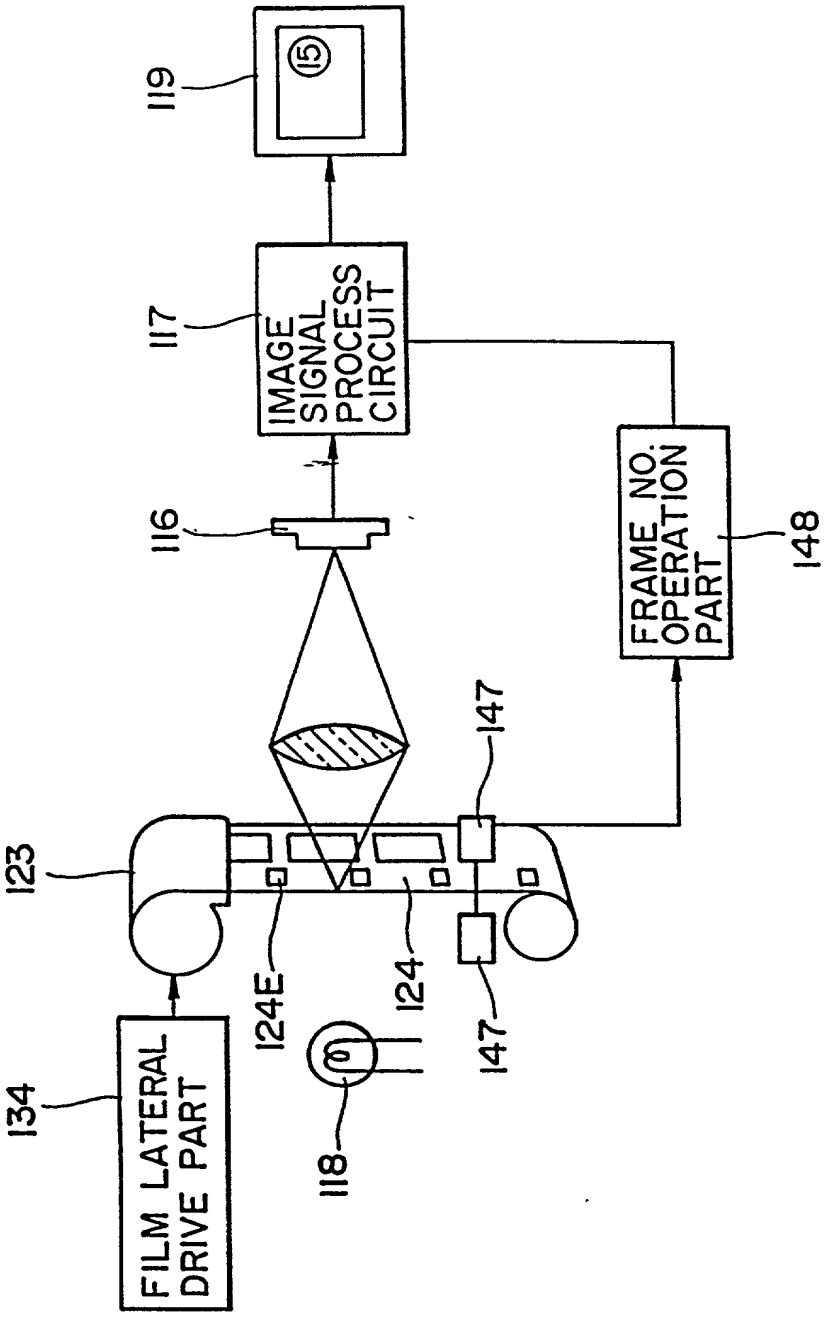

119
15
117
IMAGE SIGNAL PROCESS CIRCUIT
116
FRAME NO. OPERATION PART
148
123
147
124E
124
147
118
134
FILM LATERAL DRIVE PART

FIG. 12(A)

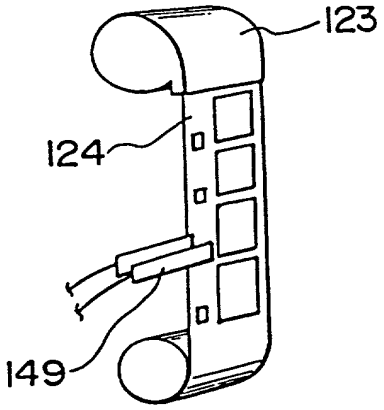


FIG. 12(B)

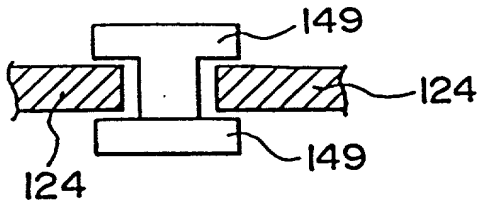


FIG. 13

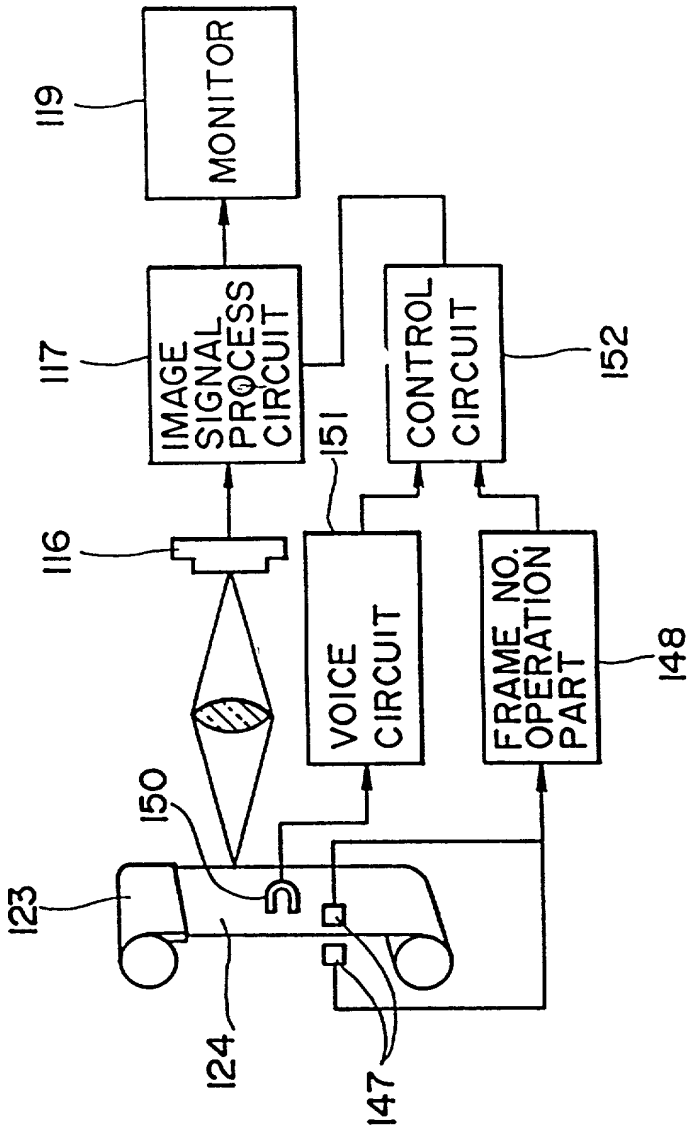

119
MONITOR
117
IMAGE SIGNAL PROCESS CIRCUIT
151
CONTROL CIRCUIT
152
116
VOICE CIRCUIT
FRAME NO. OPERATION PART
148
150
123
124
147

FIG. 14

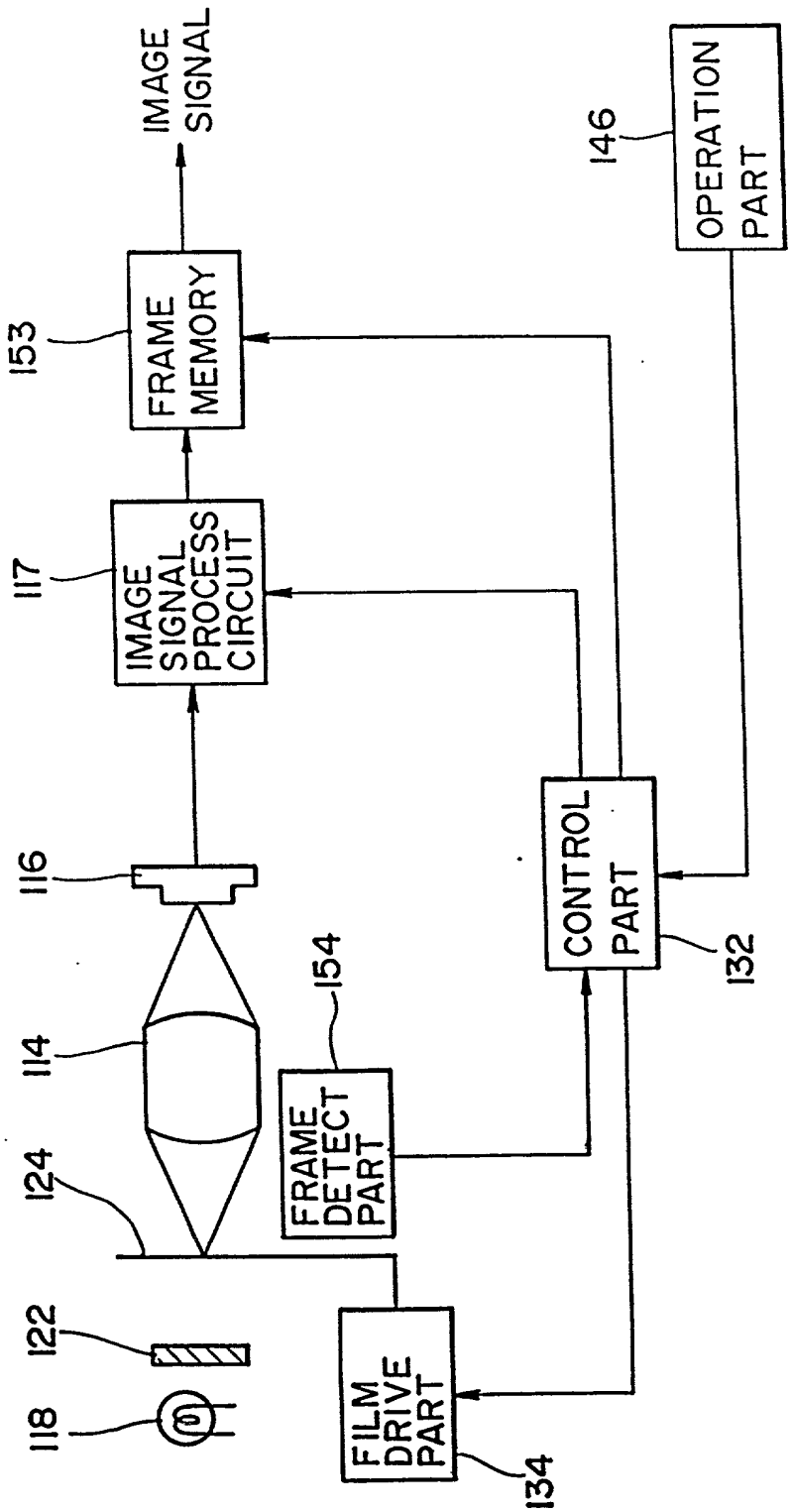


IMAGE SIGNAL
153
FRAME MEMORY
117
IMAGE SIGNAL PROCESS CIRCUIT
116
114
124
122
118
154
FRAME DETECT PART
FILM DRIVE PART
134
CONTROL PART
132
146
OPERATION PART

FIG. 15

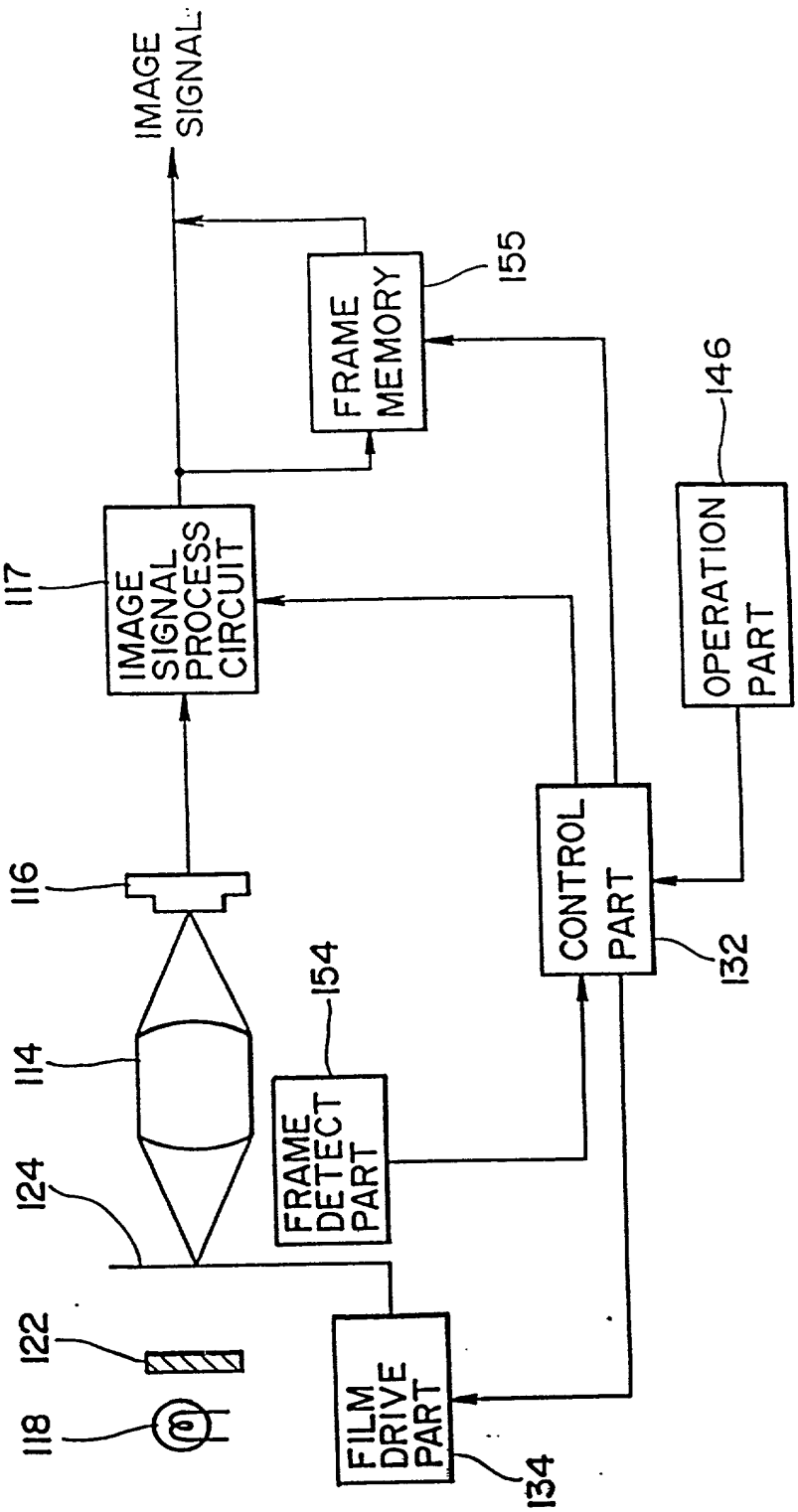


IMAGE SIGNAL
FRAME MEMORY
155
146
OPERATION PART
117
IMAGE SIGNAL PROCESS CIRCUIT
116
114
124
122
118
154
FRAME DETECT PART
CONTROL PART
132
FILM DRIVE PART
134

FIG. 16

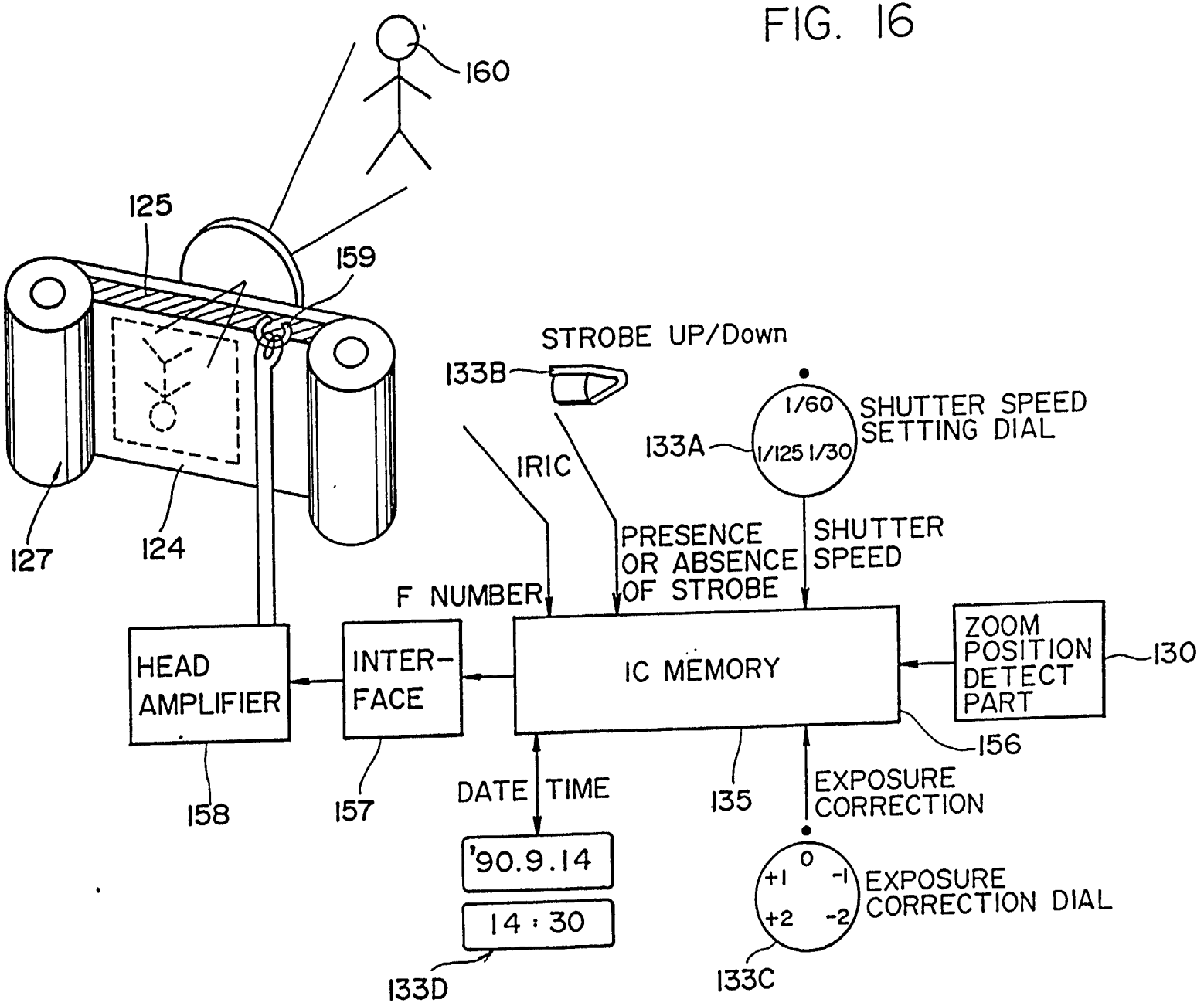

160
125
159
127
124
STROBE UP/Down
133B
IRIC
1/60
1/125 1/30
SHUTTER SPEED SETTING DIAL
133A
PRESENCE OR ABSENCE OF STROBE
SHUTTER SPEED
F NUMBER
HEAD AMPLIFIER
INTER-FACE
IC MEMORY
ZOOM POSITION DETECT PART
130
156
158
157
DATE TIME
135
EXPOSURE CORRECTION
'90.9.14
14 : 30
0
+1
-1
+2
-2
EXPOSURE CORRECTION DIAL
133D
133C

FIG. 1

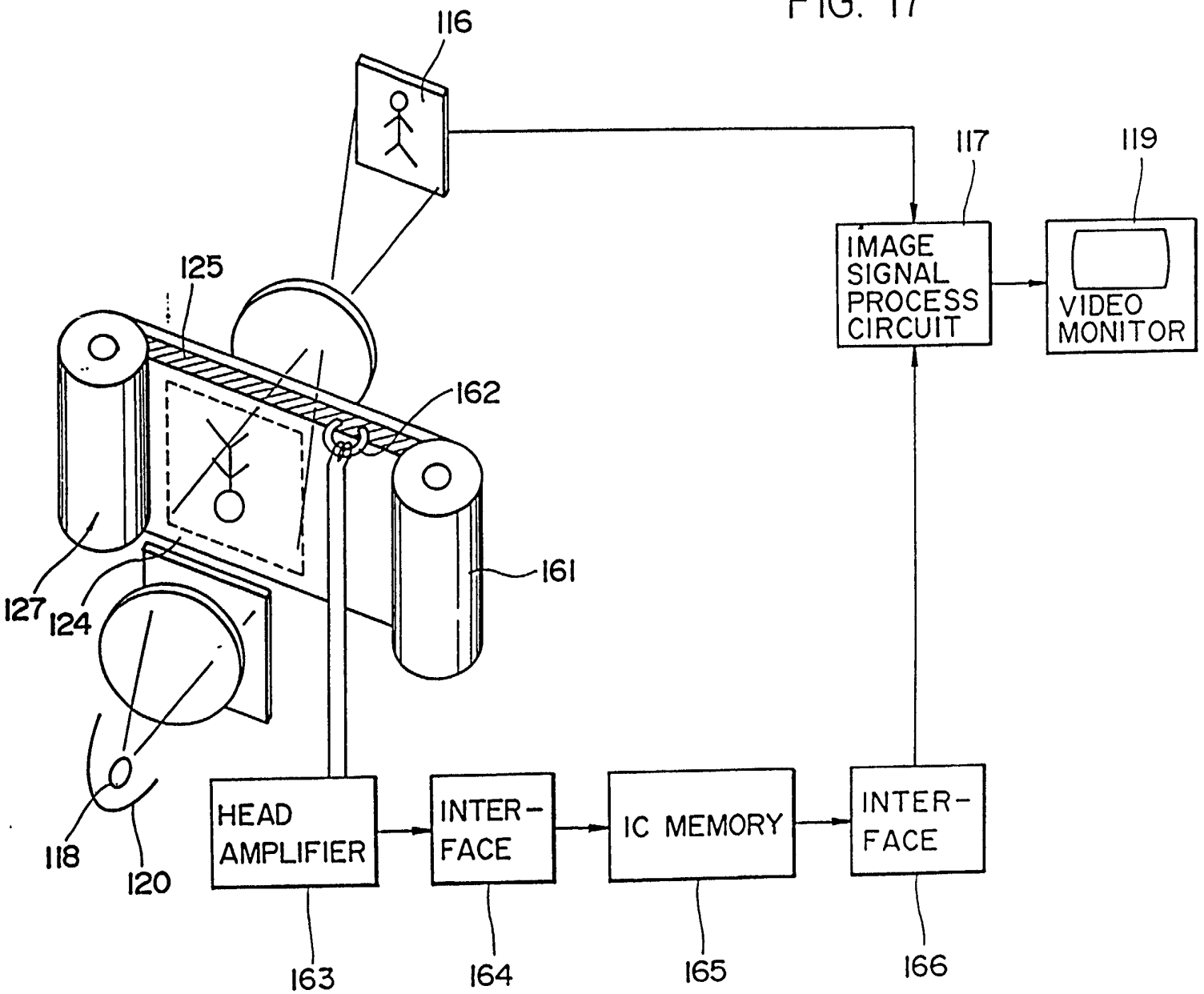

116
117
119
IMAGE SIGNAL PROCESS CIRCUIT
VIDEO MONITOR
125
162
161
127
124
118
120
HEAD AMPLIFIER
INTER-FACE
IC MEMORY
INTER-FACE
163
164
165
166

FIG. 18

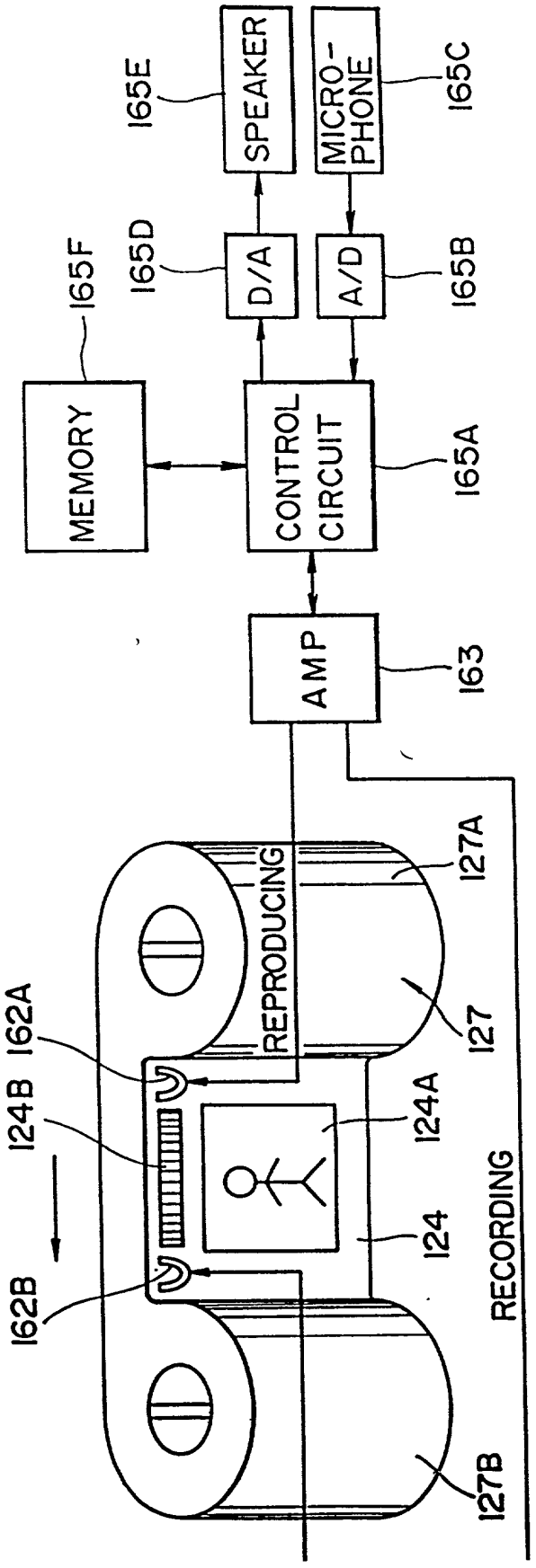

SPEAKER
MICRO-PHONE
165E
165C
D/A
A/D
165D
165B
165F
MEMORY
CONTROL CIRCUIT
165A
AMP
163
REPRODUCING
127A
162A
124B
124A
127
124
162B
RECORDING
127B

FIG. 19

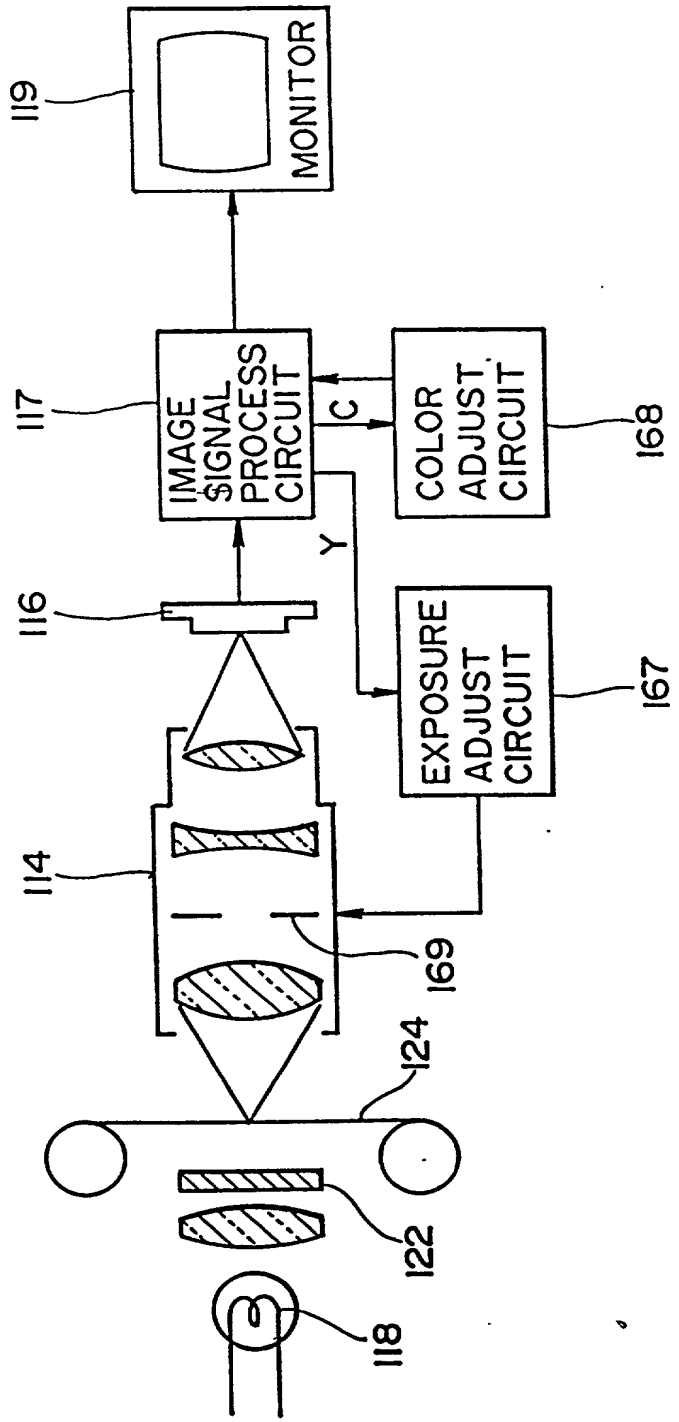

119
MONITOR
117
IMAGE SIGNAL PROCESS CIRCUIT
C
COLOR ADJUST. CIRCUIT
168
Y
116
EXPOSURE ADJUST CIRCUIT
167
114
169
124
122
118

FIG. 20

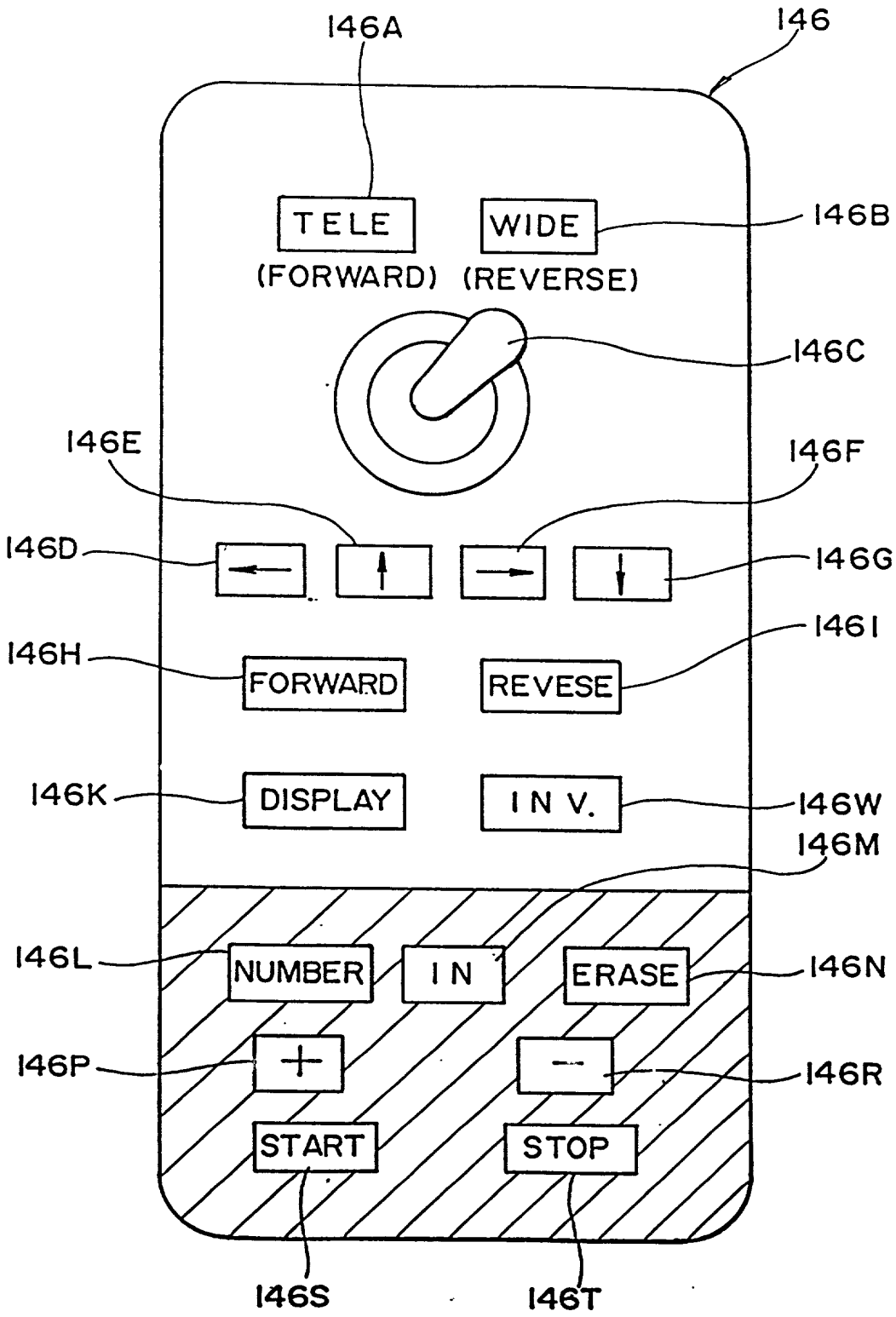

146A
146
TELE
(FORWARD)
WIDE
(REVERSE)
146B
146C
146E
146F
146D
146G
146H
FORWARD
REVESE
1461
146K
DISPLAY
INV.
146W
146M
146L
NUMBER
IN
ERASE
146N
146P
146R
START
STOP
146S
146T

FIG. 21

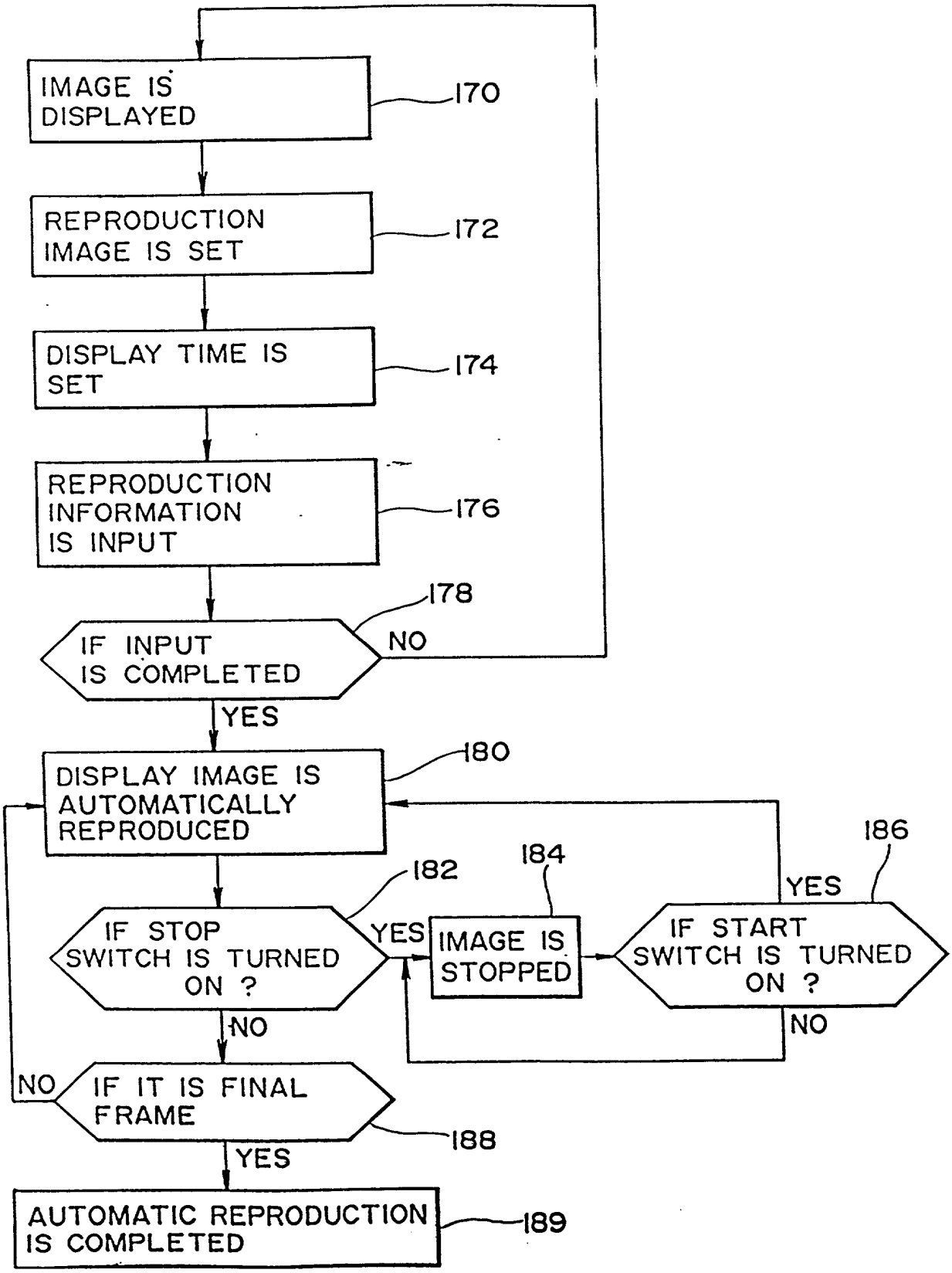


IMAGE IS DISPLAYED
170
REPRODUCTION IMAGE IS SET
172
DISPLAY TIME IS SET
174
REPRODUCTION INFORMATION IS INPUT
176
178
IF INPUT IS COMPLETED
NO
YES
180
DISPLAY IMAGE IS AUTOMATICALLY REPRODUCED
182
184
186
IF STOP SWITCH IS TURNED ON ?
YES
IMAGE IS STOPPED
IF START SWITCH IS TURNED ON ?
YES
NO
NO
NO
IF IT IS FINAL FRAME
188
YES
AUTOMATIC REPRODUCTION IS COMPLETED
189

FIG. 22

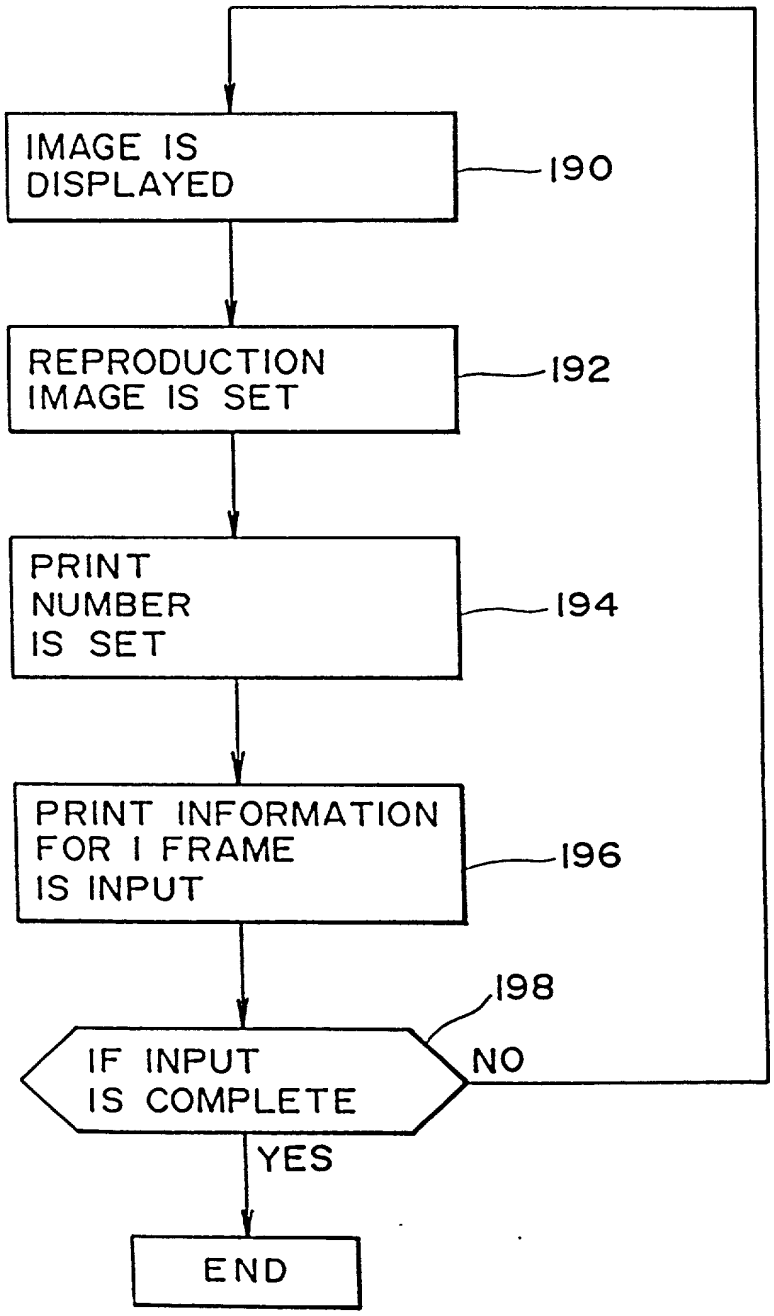


IMAGE IS DISPLAYED
190
REPRODUCTION IMAGE IS SET
192
PRINT NUMBER IS SET
194
PRINT INFORMATION FOR I FRAME IS INPUT
196
198
IF INPUT IS COMPLETE
NO
YES
END

FIG. 23

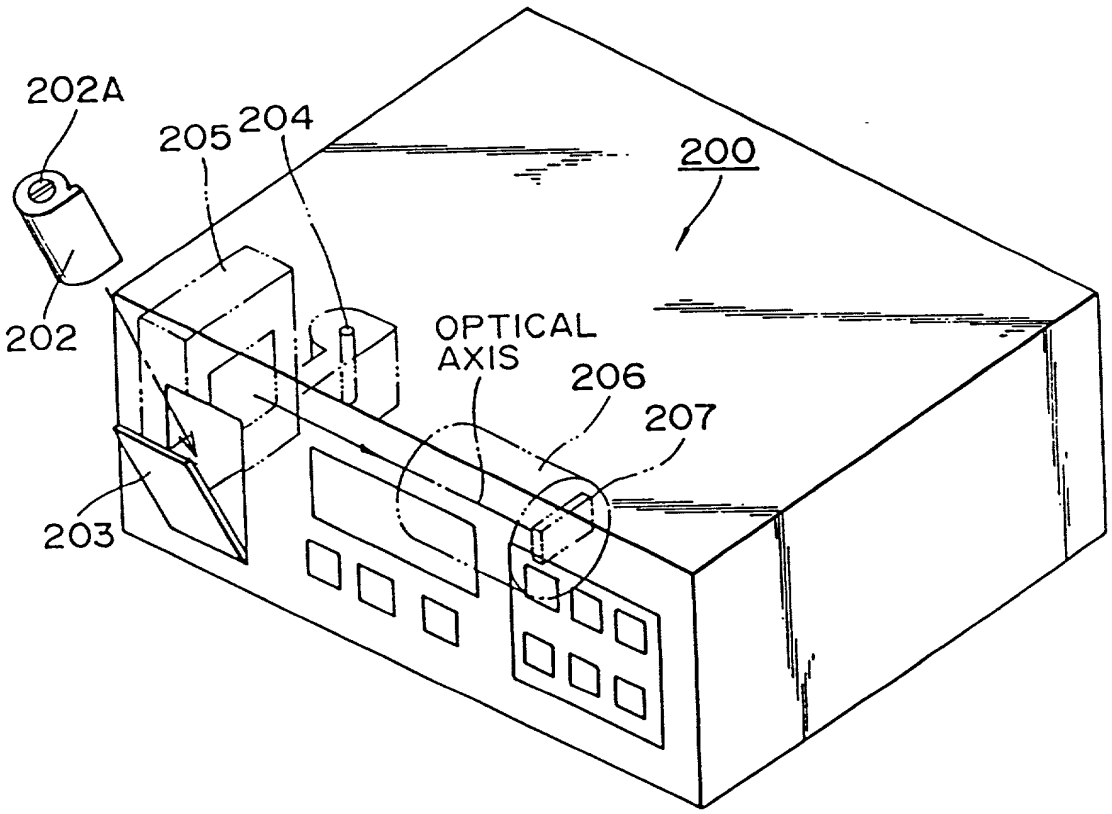


FIG. 24

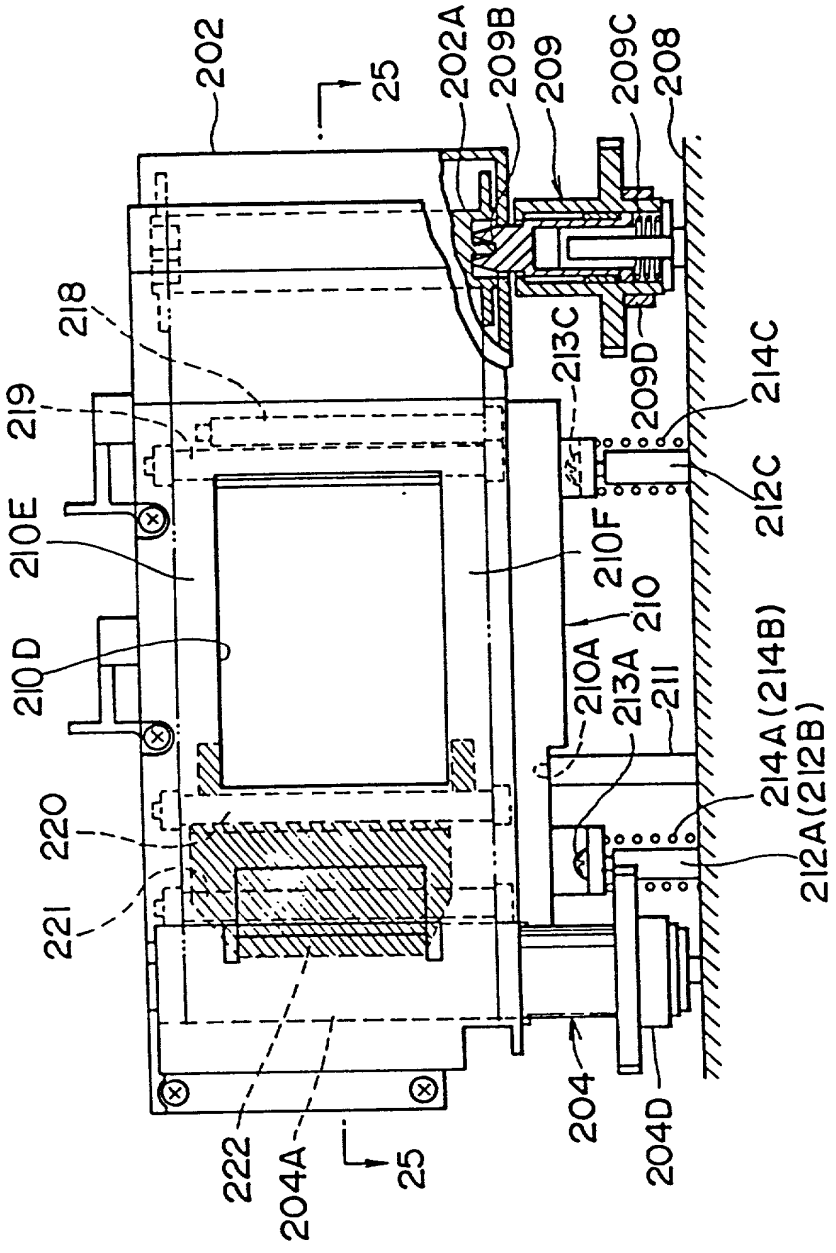

202
25
202A
209B
209
209C
208
218
219
213C
209D
214C
210E
210F
212C
210
210D
210A
213A
211
214A(214B)
220
212A(212B)
221
222
204A
25
204
204D

FIG. 25

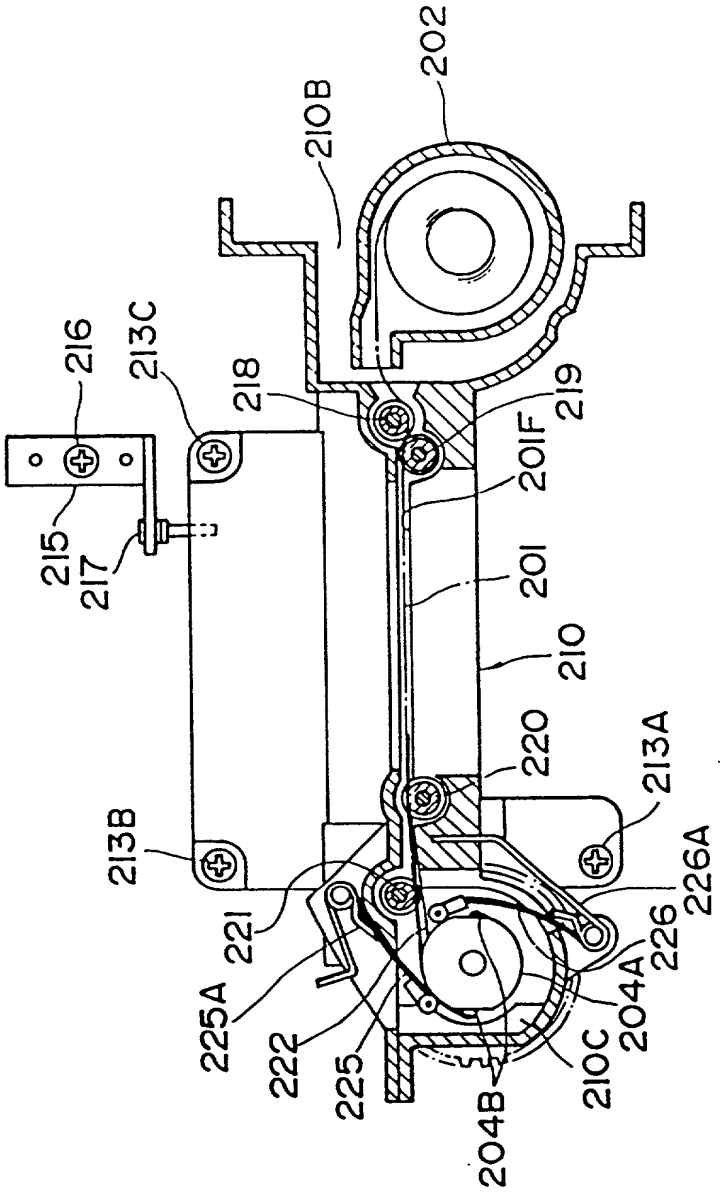

202
210B
216
213C
218
219
201F
215
217
201
210
220
213A
213B
221
226A
226
225A
204A
222
225
210C
204B

FIG. 26

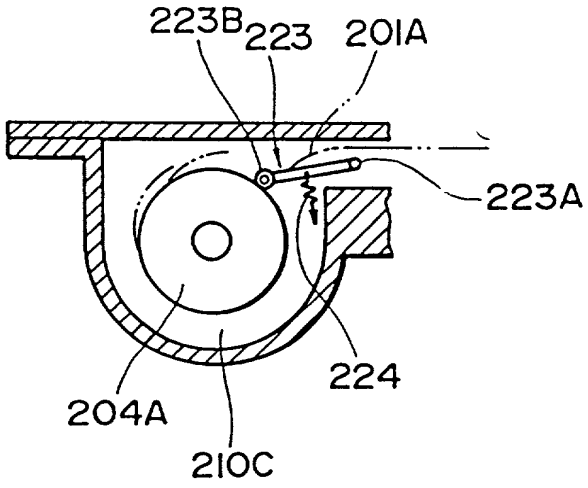


FIG. 27

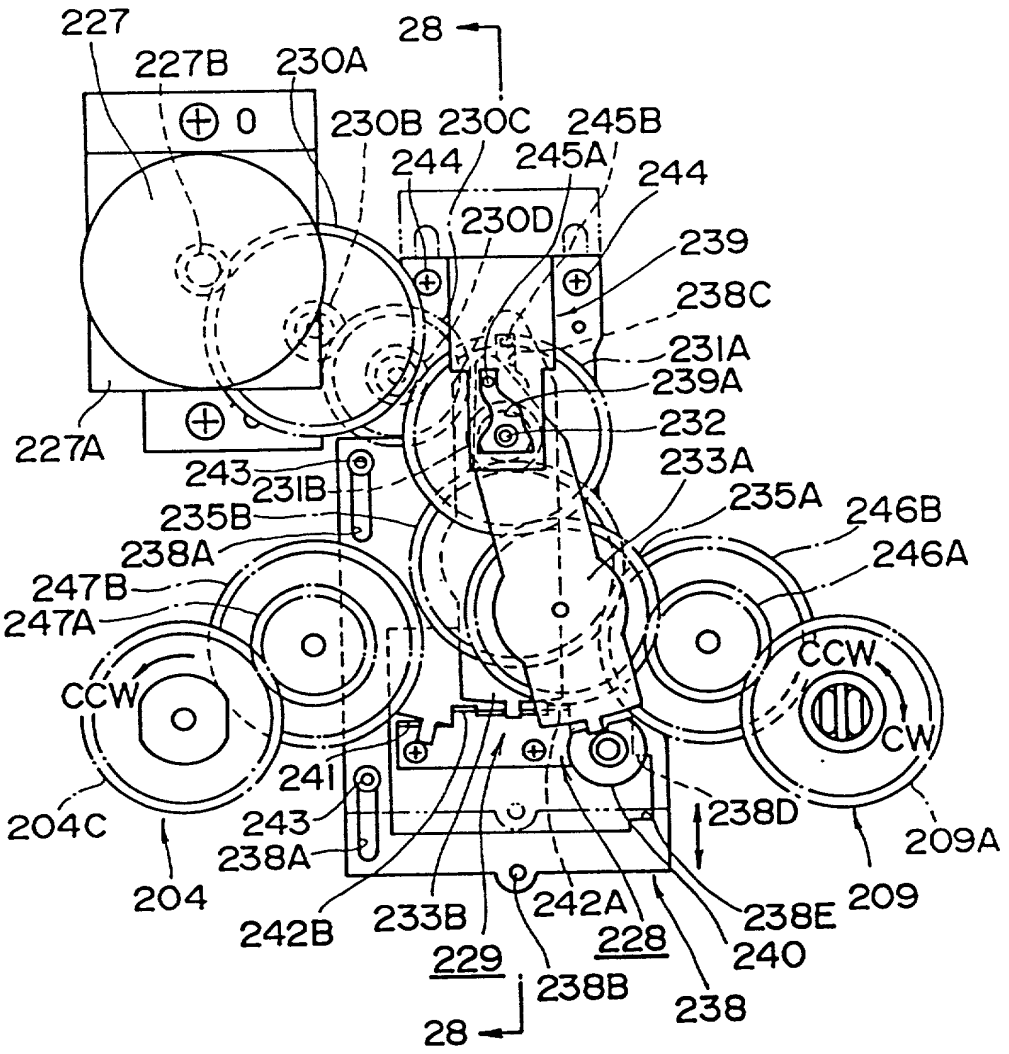

227
227B
230A
28
230B
230C
245B
244
245A
244
230D
239
238C
231A
239A
232
227A
243
231B
233A
235B
235A
246B
238A
246A
247B
247A
CCW
CCW
CW
241
238D
243
209A
204C
238A
204
242B
233B
242A
238E
209
229
228
240
238B
238
28

FIG. 28

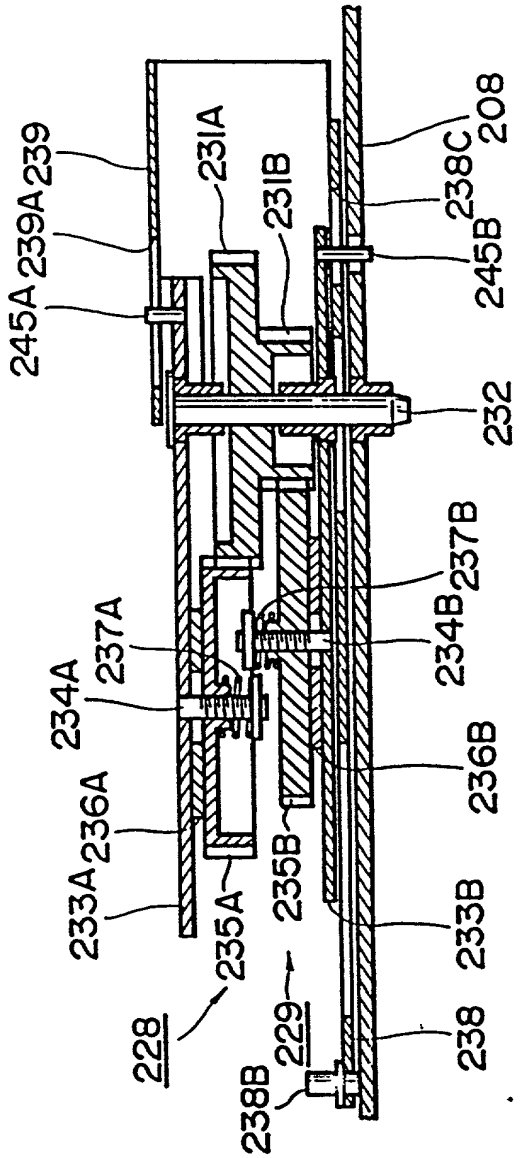

239
239A
245A
231A
231B
208
238C
245B
232
237B
234B
237A
234A
236A
233A
236B
235B
235A
233B
228
229
238
238B

FIG. 29

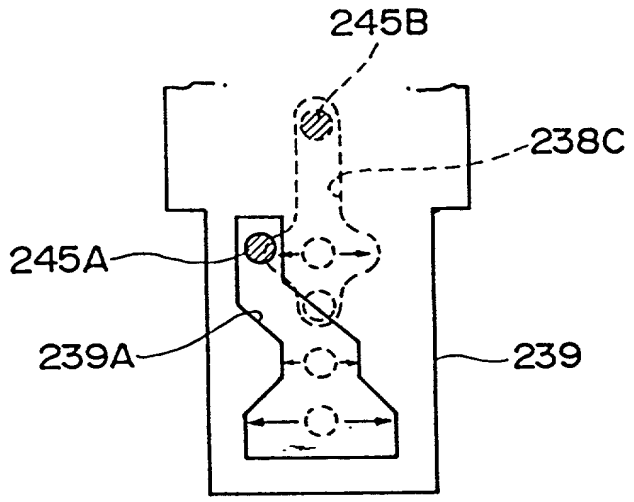


FIG. 30

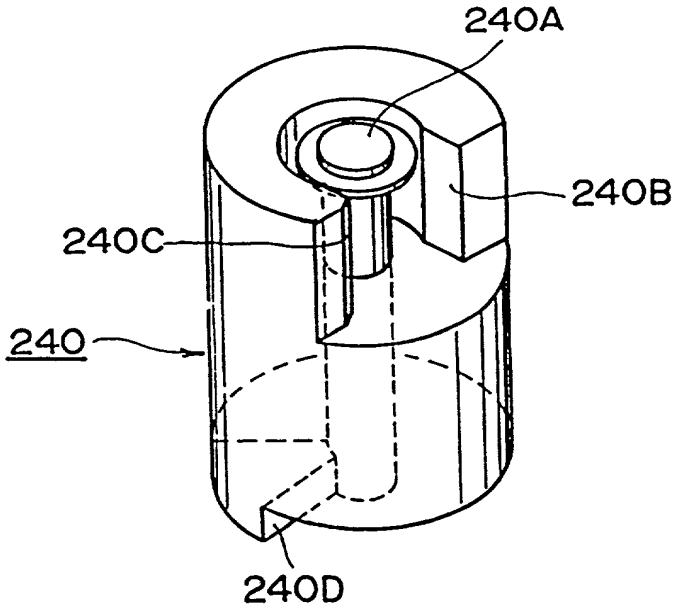


FIG. 31

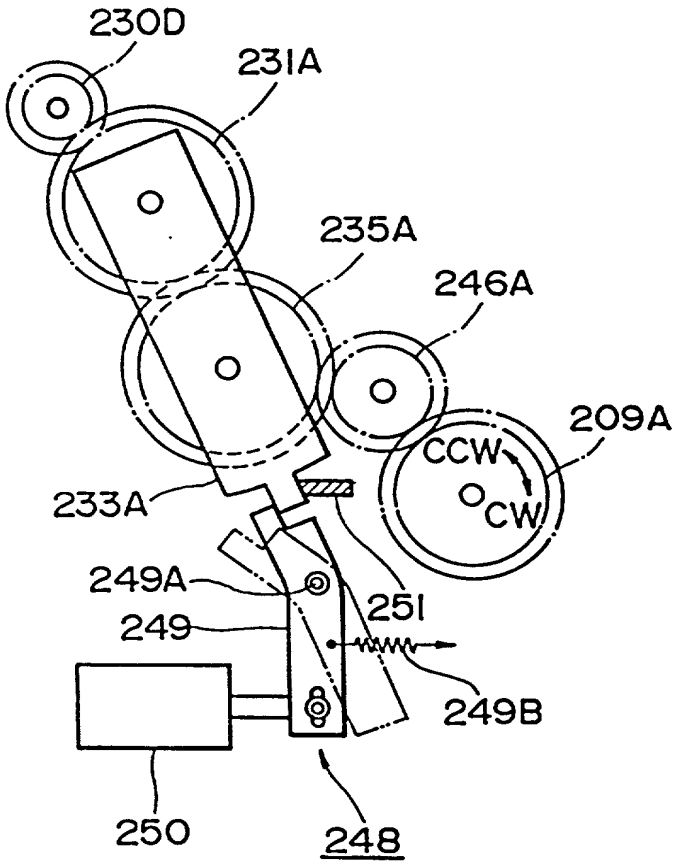


FIG. 32

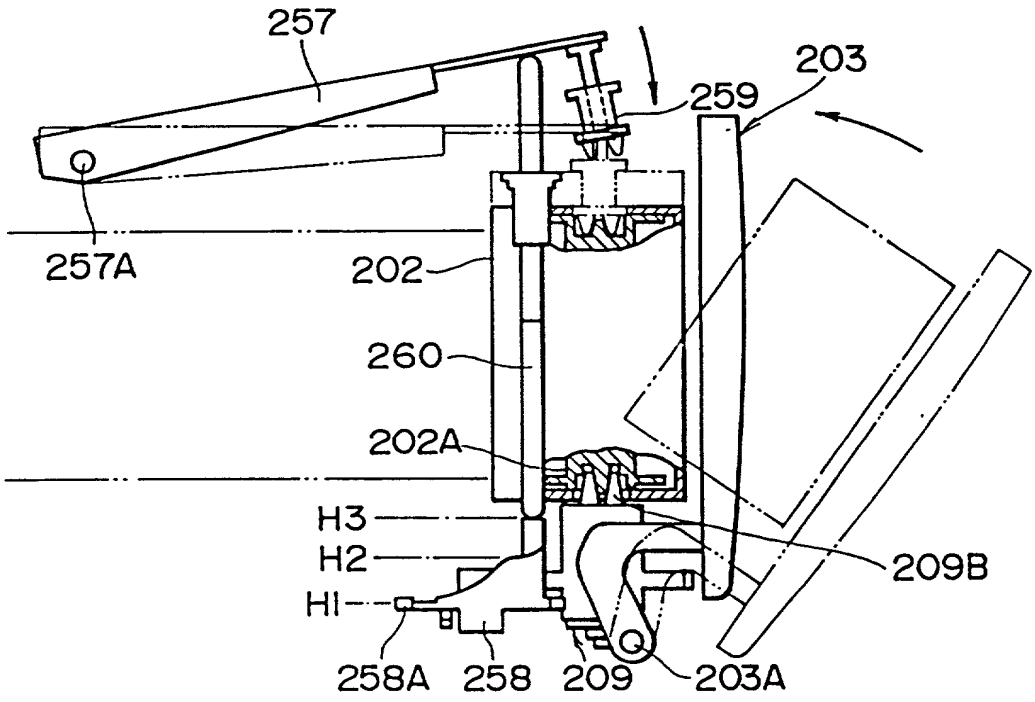

257
203
259
257A
202
260
202A
H3
H2
H1
209B
258A
258
209
203A

FIG. 33

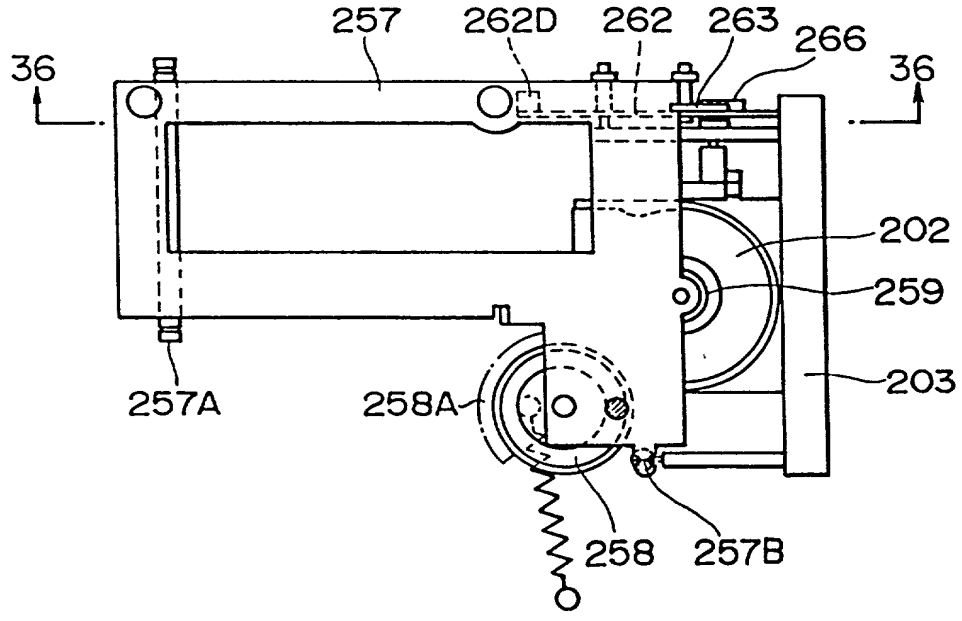

257
262D
262
263
266
36
36
202
259
203
257A
258A
258
257B

FIG. 34

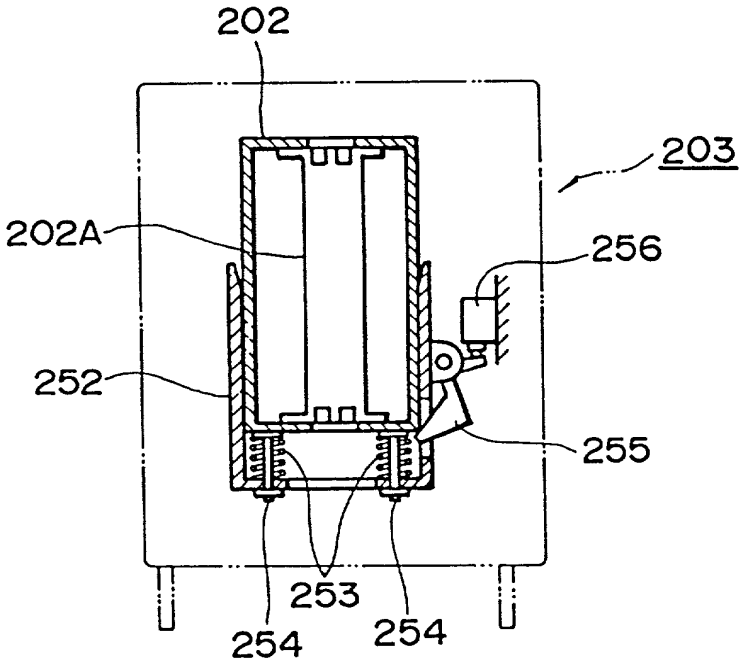


FIG. 35

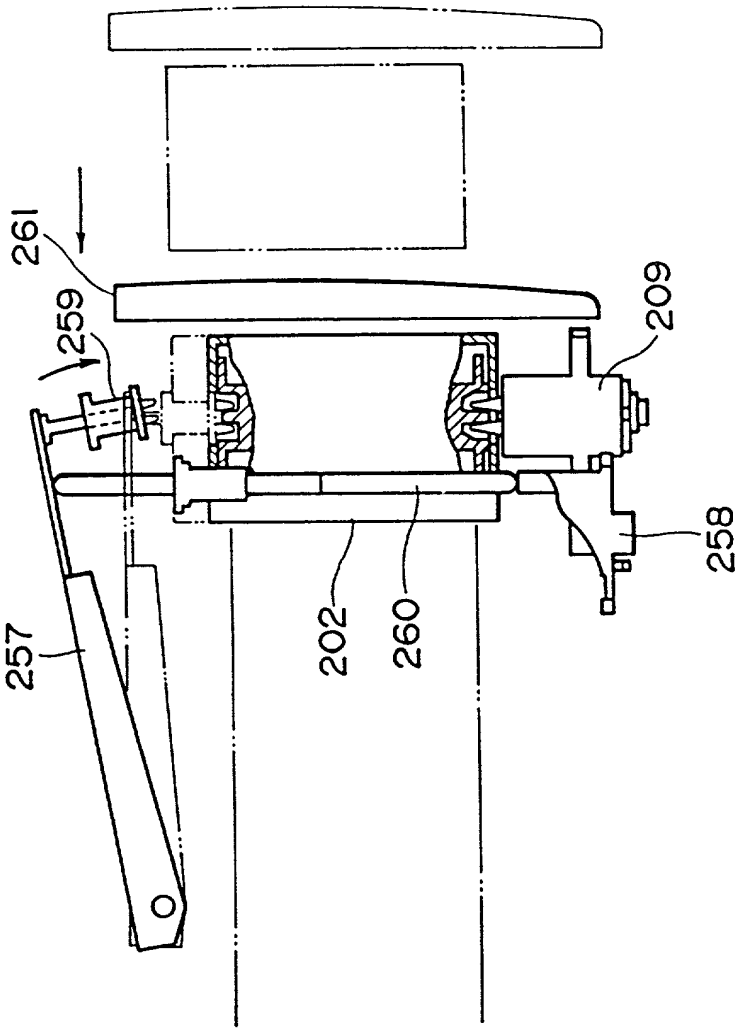


FIG. 36

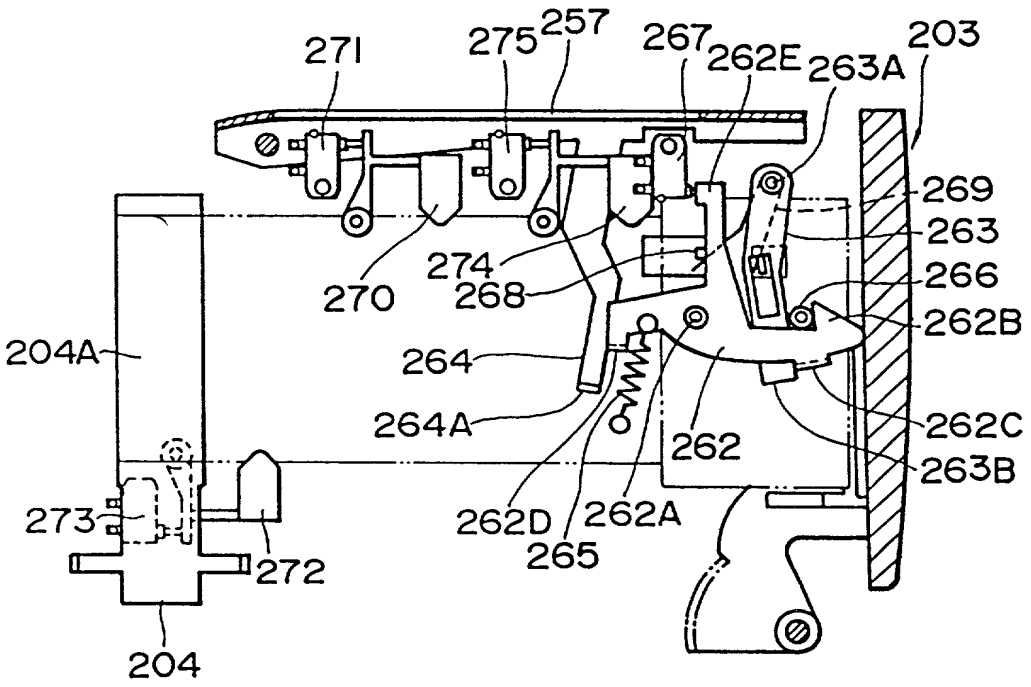
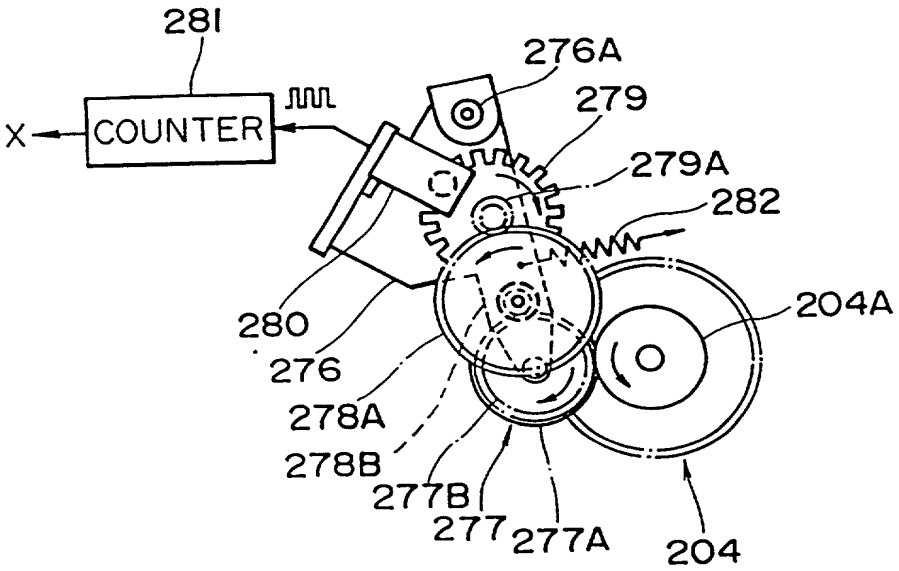

271
275
257
267
262E
263A
203
269
263
266
262B
262C
263B
274
270
268
264
264A
262
262D
262A
265
204A
273
272
204

FIG. 37


281
COUNTER
X
276A
279
279A
282
204A
280
276
278A
278B
277B
277
277A
204

SCANNED #14

FIG. 38

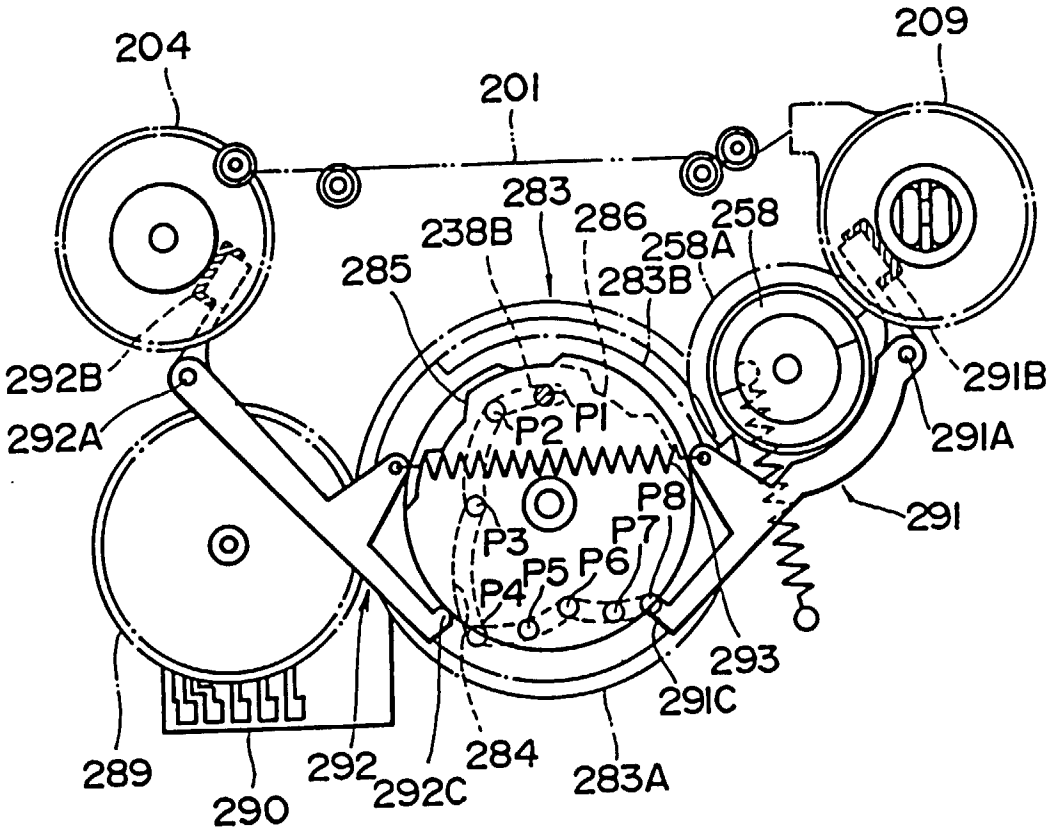


FIG. 39

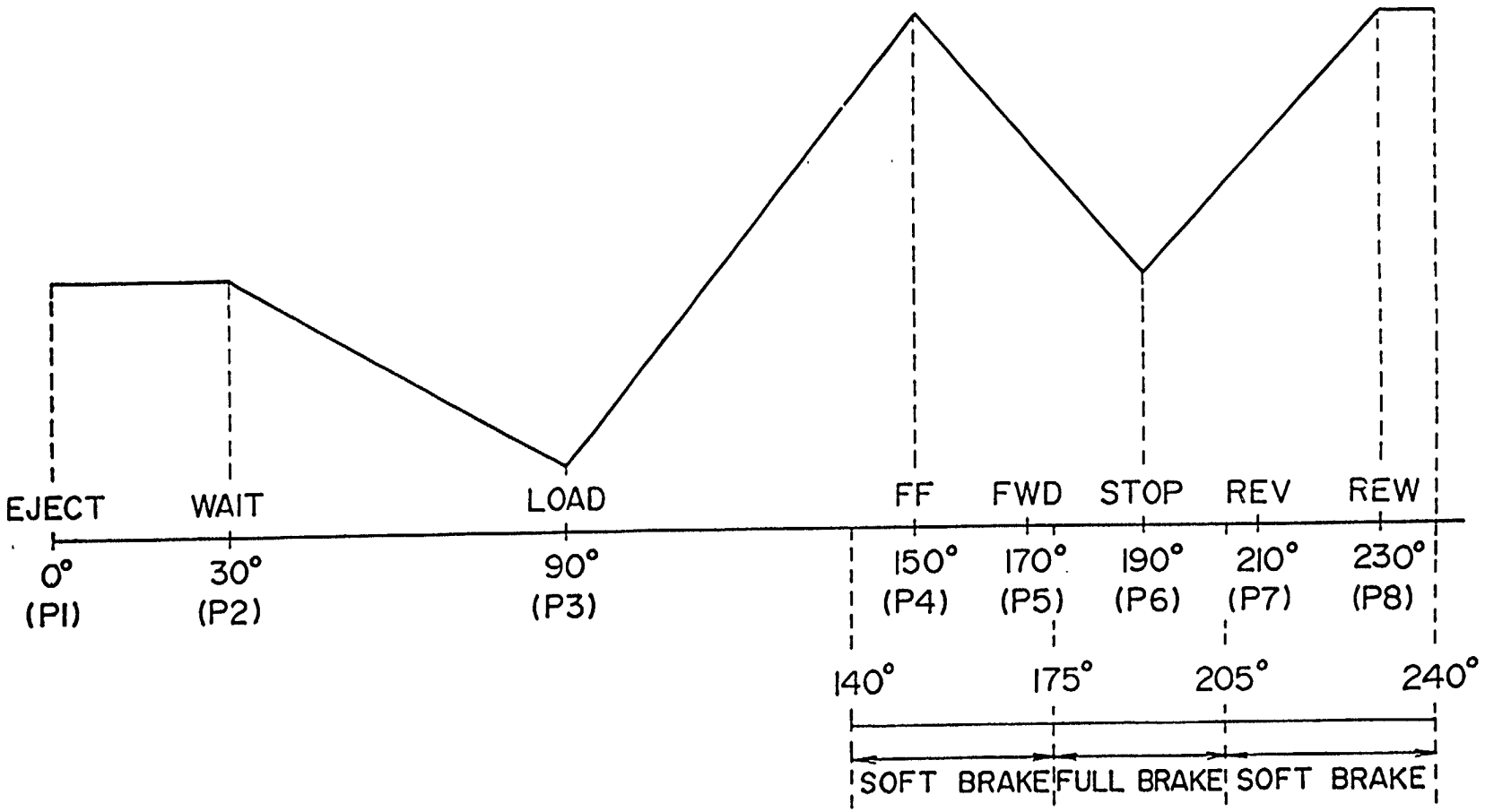

EJECT
WAIT
LOAD
FF
FWD
STOP
REV
REW
0°
(P1)
30°
(P2)
90°
(P3)
150°
(P4)
170°
(P5)
190°
(P6)
210°
(P7)
230°
(P8)
140°
175°
205°
240°
SOFT BRAKE
FULL BRAKE
SOFT BRAKE

FIG. 40

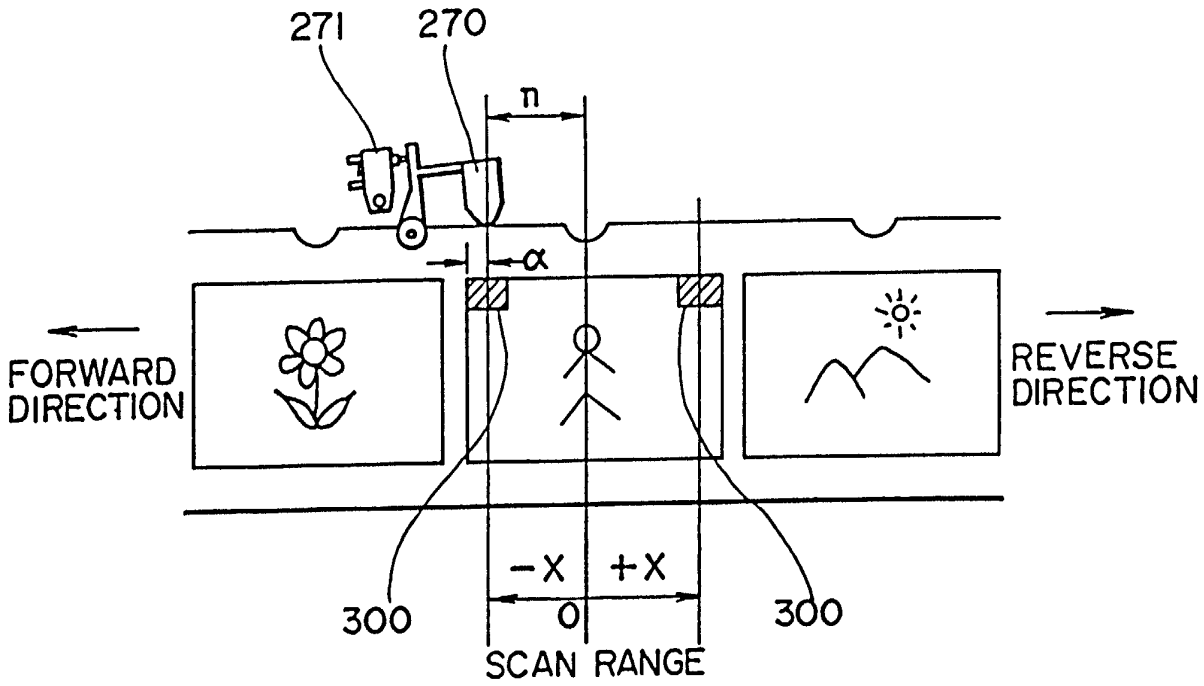

271
270
n
α
FORWARD DIRECTION
REVERSE DIRECTION
300
-X
+X
0
300
SCAN RANGE

FIG. 41

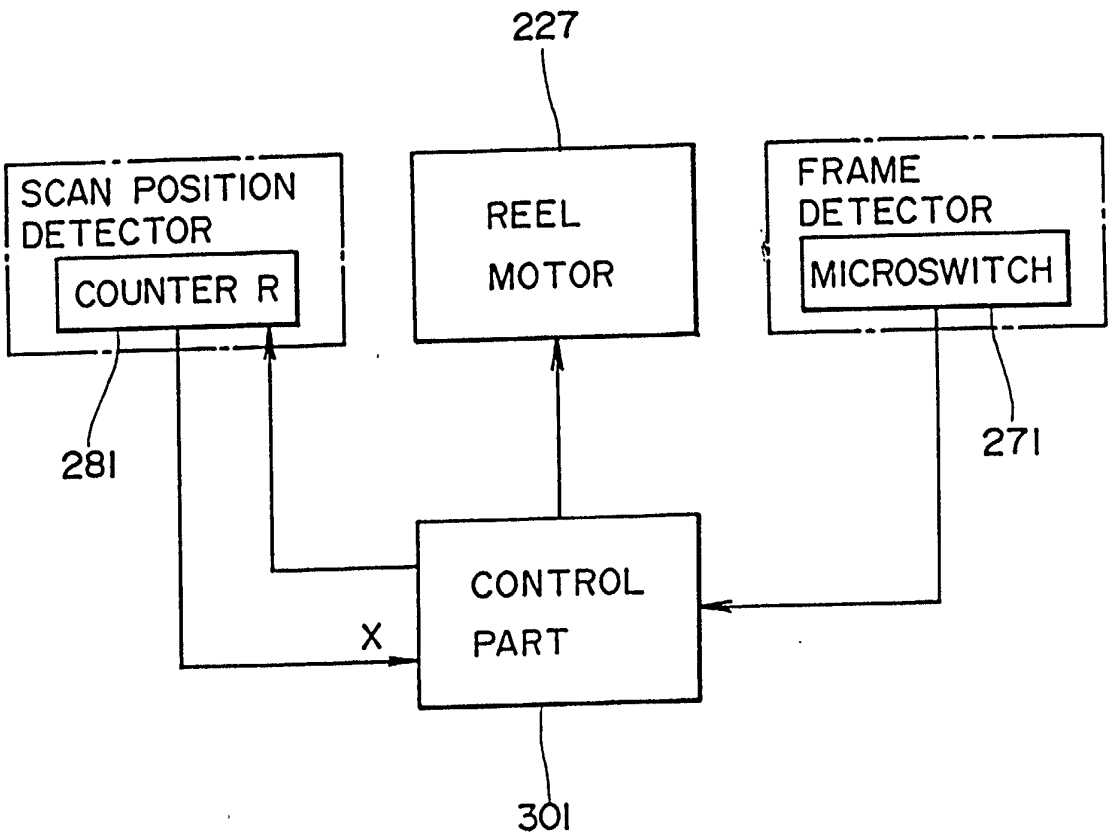

227
SCAN POSITION DETECTOR
COUNTER R
REEL MOTOR
FRAME DETECTOR
MICROSWITCH
281
271
CONTROL PART
X
301

FIG. 42

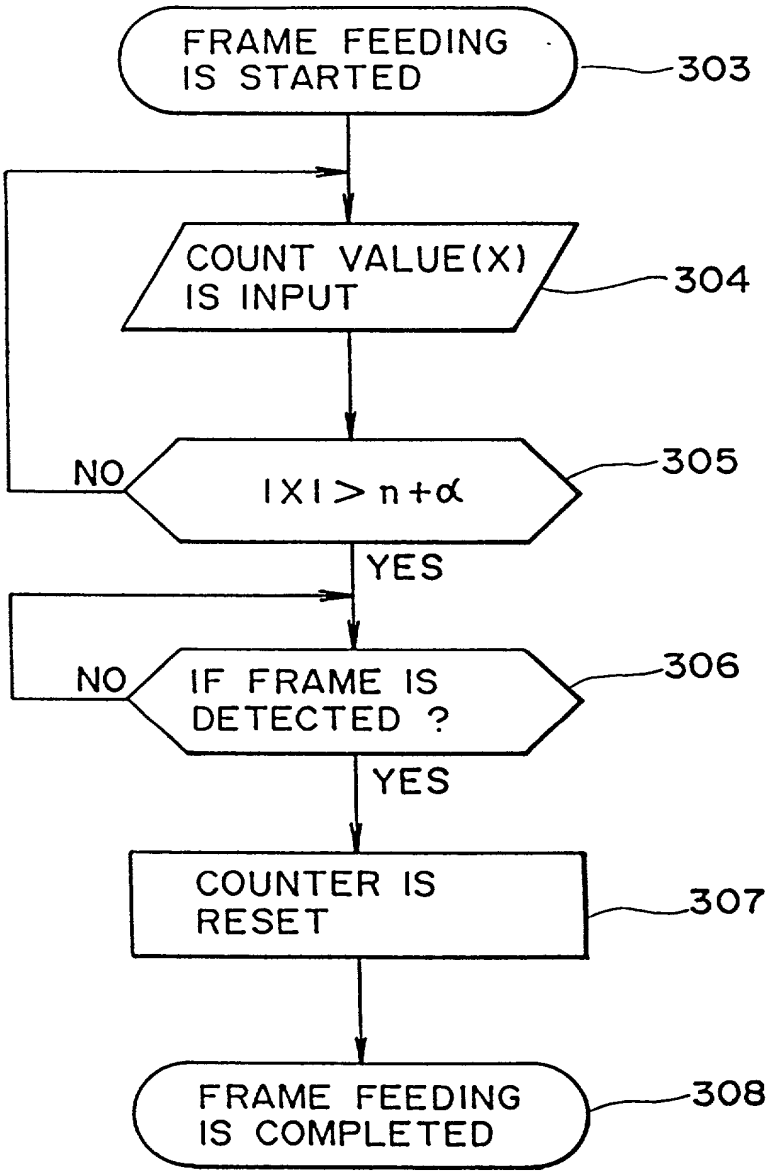

FRAME FEEDING IS STARTED
303
COUNT VALUE(X) IS INPUT
304
NO
|X| > n+α
305
YES
NO
IF FRAME IS DETECTED ?
306
YES
COUNTER IS RESET
307
FRAME FEEDING IS COMPLETED
308

FIG. 43

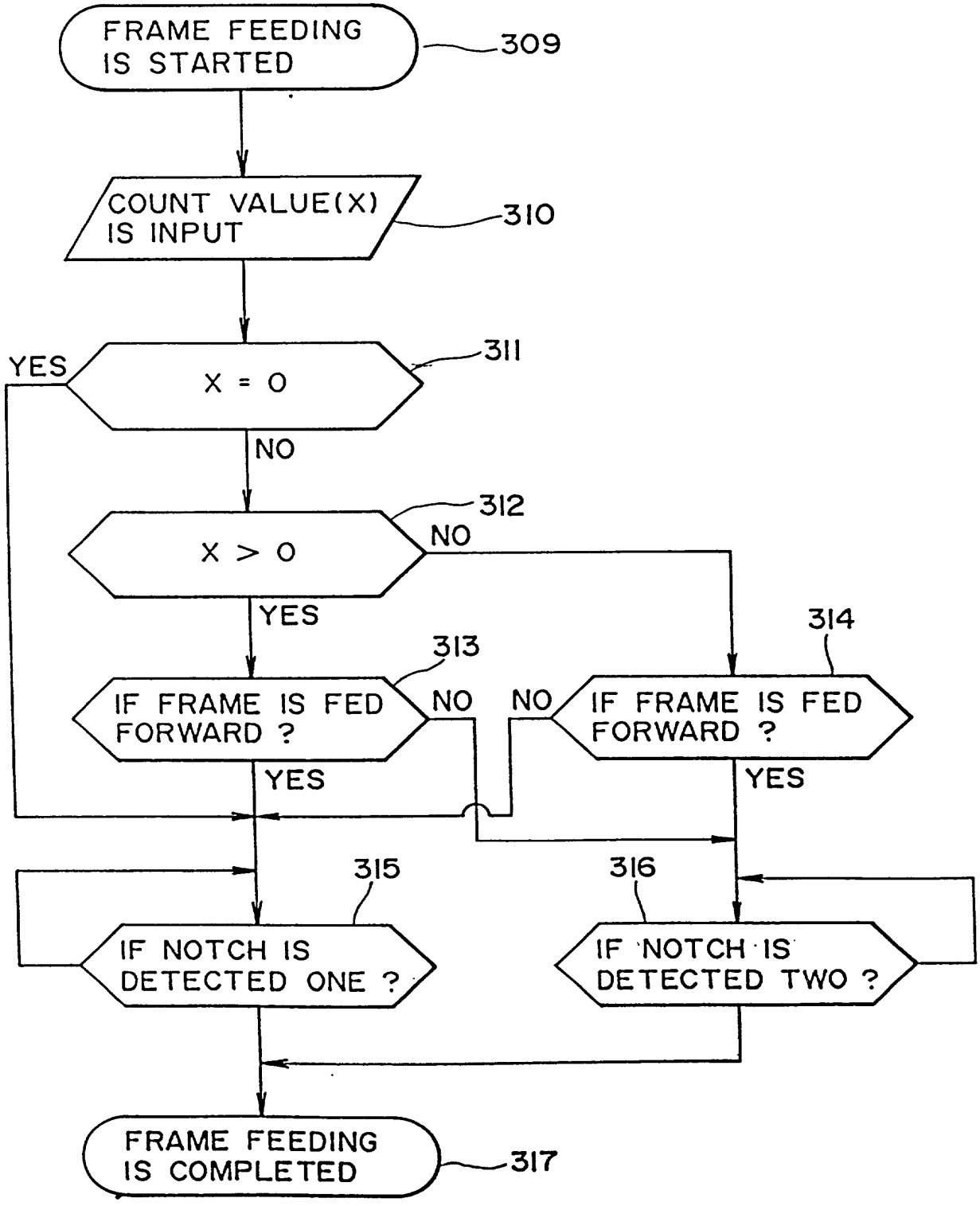

FRAME FEEDING IS STARTED
309
COUNT VALUE(X) IS INPUT
310
X = 0
311
YES
NO
X > 0
312
NO
YES
IF FRAME IS FED FORWARD ?
313
NO
YES
IF FRAME IS FED FORWARD ?
314
NO
YES
IF NOTCH IS DETECTED ONE ?
315
IF NOTCH IS DETECTED TWO ?
316
FRAME FEEDING IS COMPLETED
317

FIG. 44

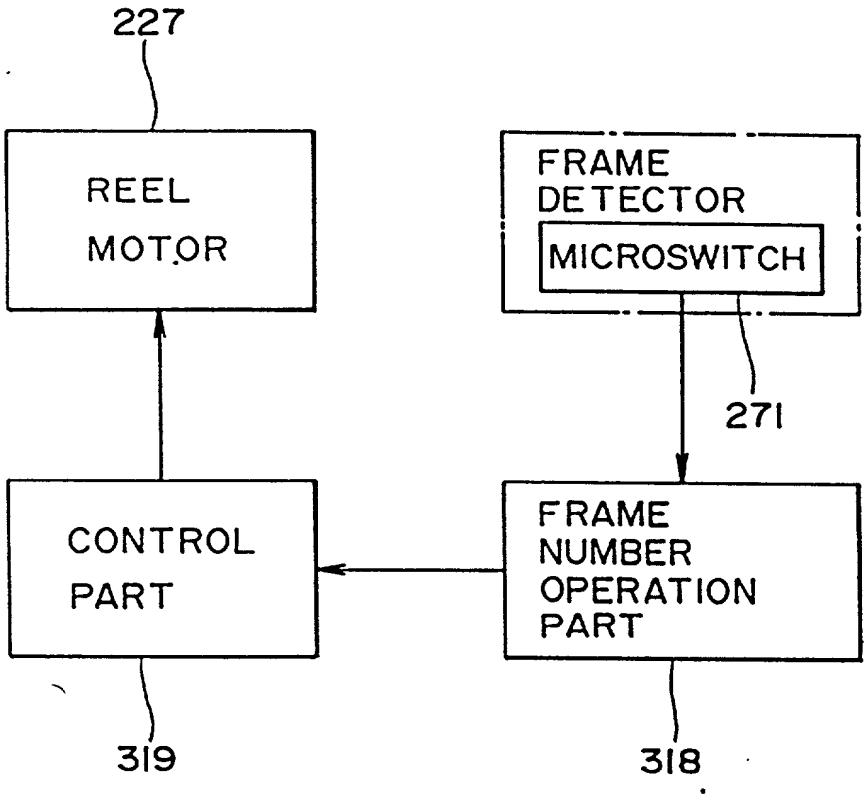

227
REEL MOTOR
FRAME DETECTOR
MICROSWITCH
271
CONTROL PART
FRAME NUMBER OPERATION PART
319
318

FIG. 45

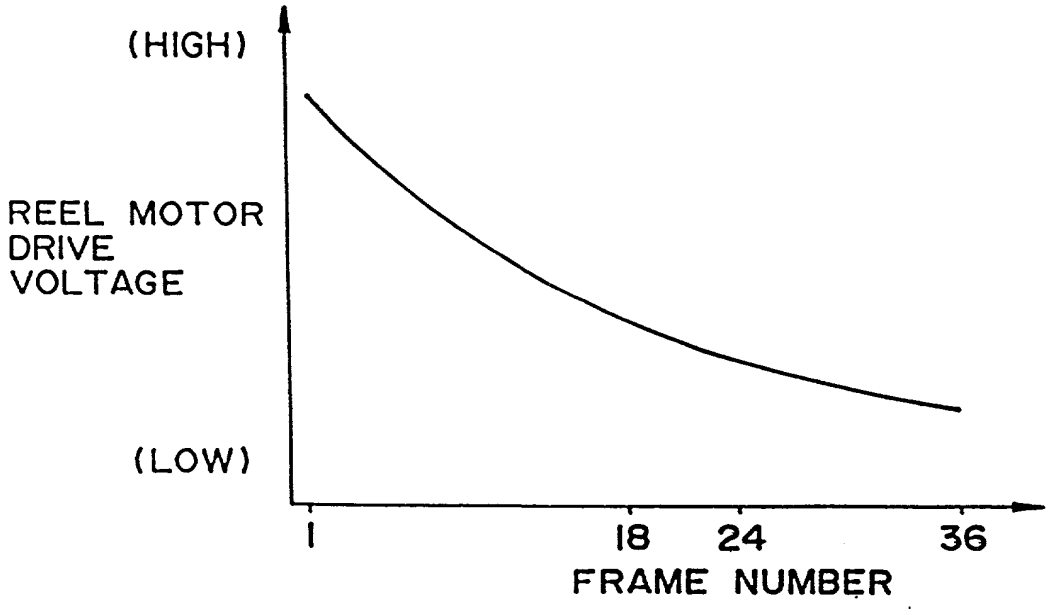

(HIGH)
REEL MOTOR DRIVE VOLTAGE
(LOW)
1
18
24
36
FRAME NUMBER

FIG. 46

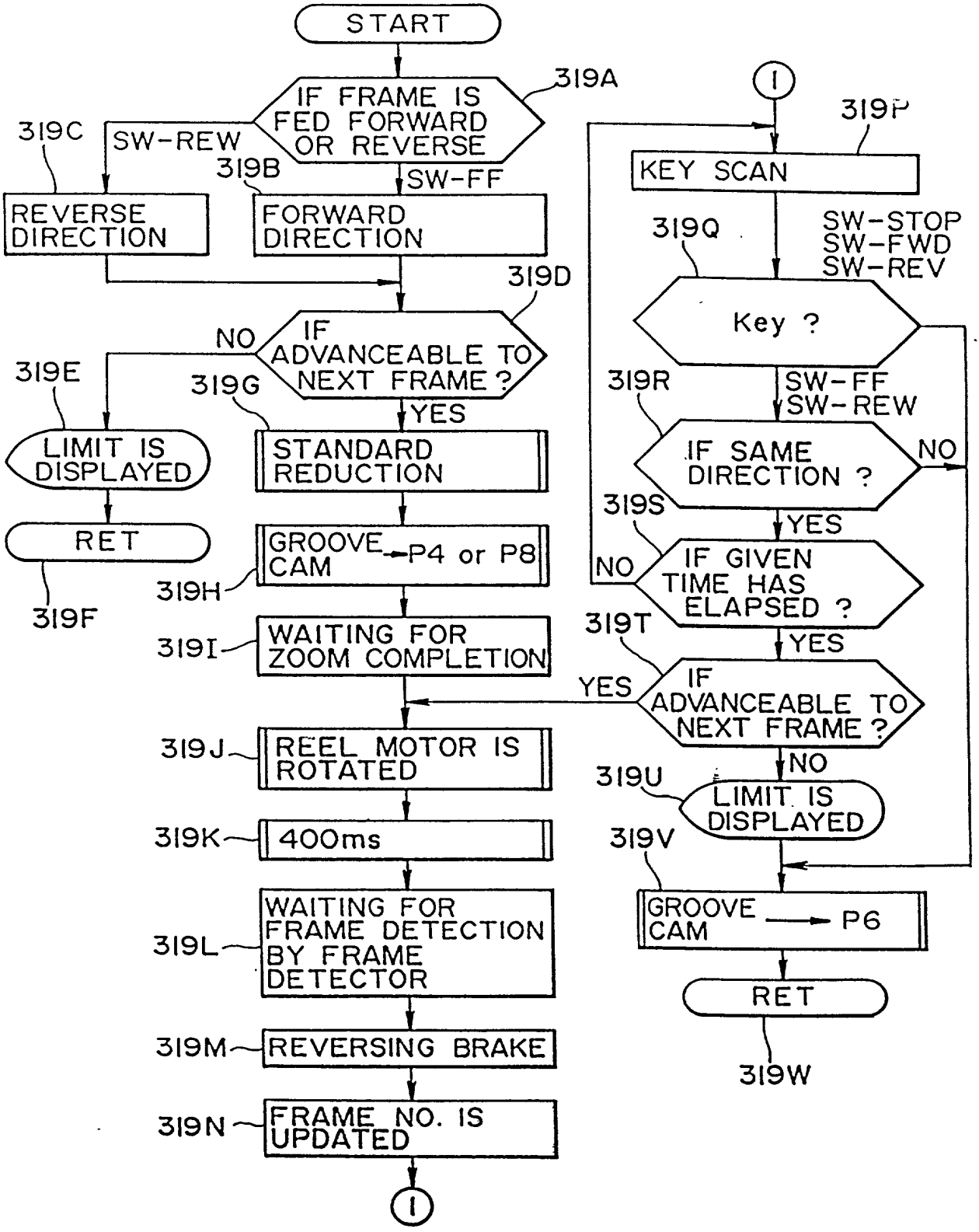

START
IF FRAME IS FED FORWARD OR REVERSE
319A
SW-REW
SW-FF
319C
319B
REVERSE DIRECTION
FORWARD DIRECTION
319D
NO
IF ADVANCEABLE TO NEXT FRAME ?
YES
319E
319G
LIMIT IS DISPLAYED
STANDARD REDUCTION
RET
GROOVE CAM → P4 or P8
319F
319H
WAITING FOR ZOOM COMPLETION
319I
REEL MOTOR IS ROTATED
319J
400ms
319K
WAITING FOR FRAME DETECTION BY FRAME DETECTOR
319L
REVERSING BRAKE
319M
FRAME NO. IS UPDATED
319N
I
I
319P
KEY SCAN
319Q
SW-STOP
SW-FWD
SW-REV
Key ?
319R
SW-FF
SW-REW
IF SAME DIRECTION ?
NO
YES
319S
NO
IF GIVEN TIME HAS ELAPSED ?
YES
319T
YES
IF ADVANCEABLE TO NEXT FRAME ?
NO
319U
LIMIT IS DISPLAYED
319V
GROOVE CAM → P6
RET
319W

FIG. 47

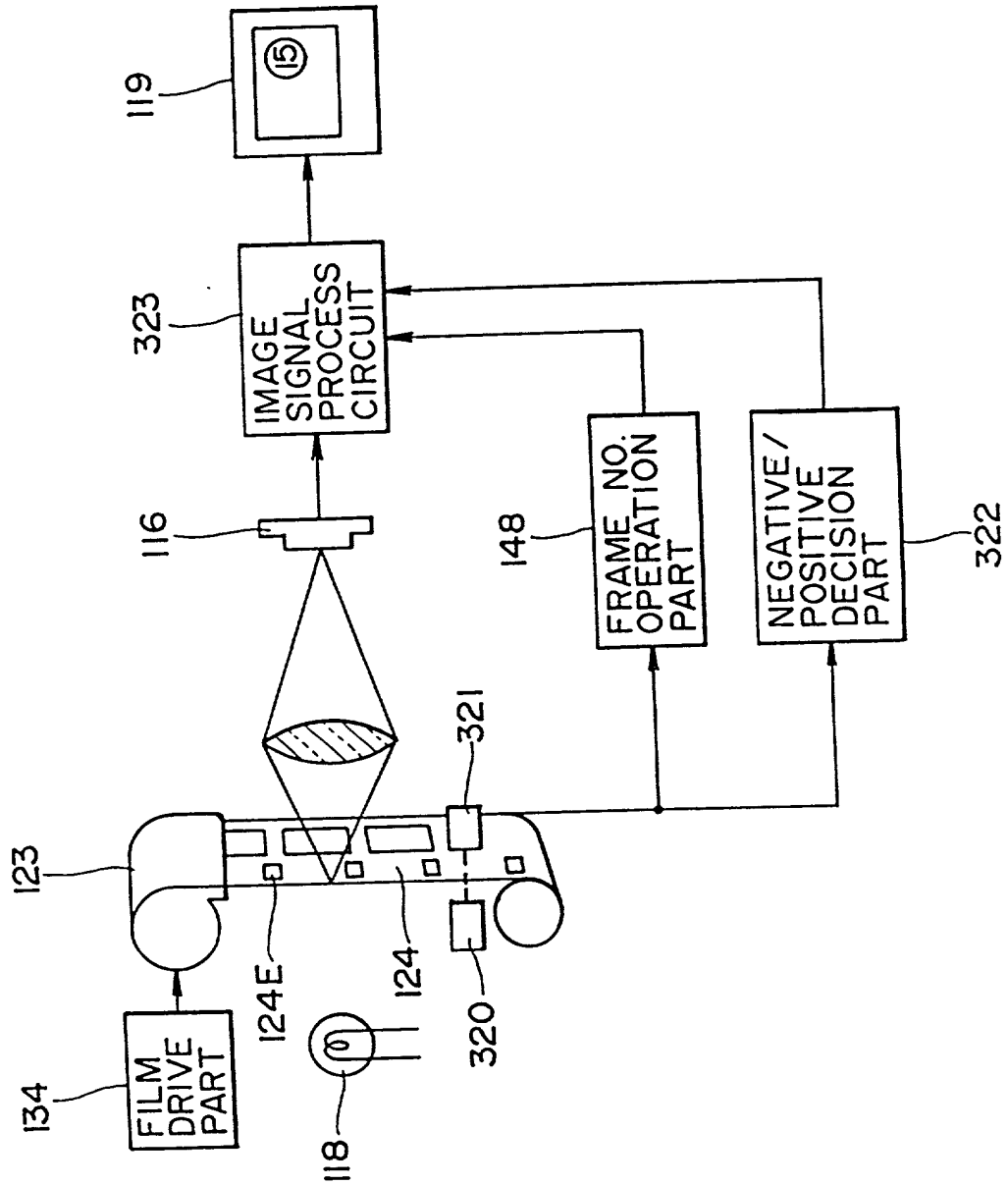

119
15
323
IMAGE SIGNAL PROCESS CIRCUIT
116
148
FRAME NO. OPERATION PART
NEGATIVE/ POSITIVE DECISION PART
322
321
123
124E
124
320
134
FILM DRIVE PART
118

FIG. 48

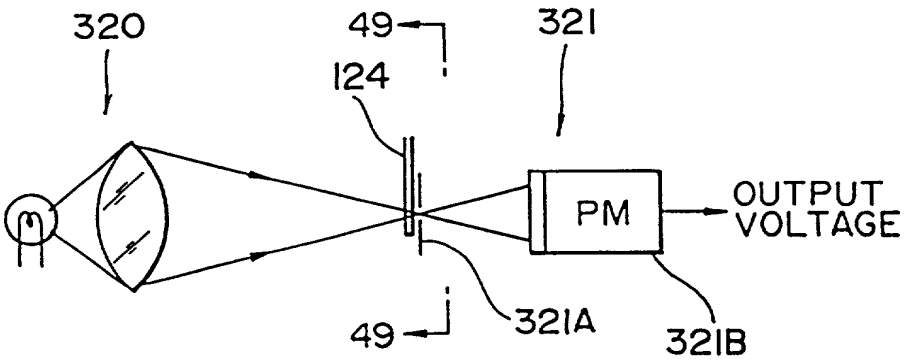


FIG. 49

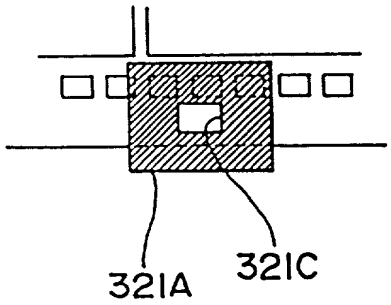


FIG. 50

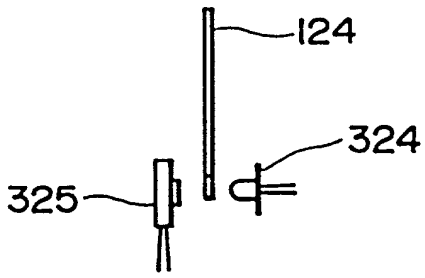


FIG. 51(A)

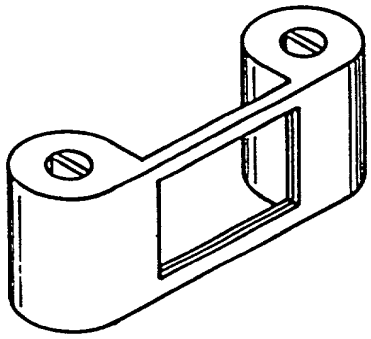


FIG. 51(B)

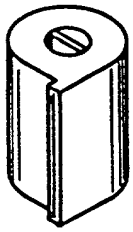


FIG. 52(B)

FIG. 52(A)

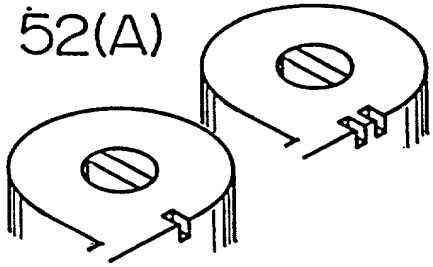


FIG. 53

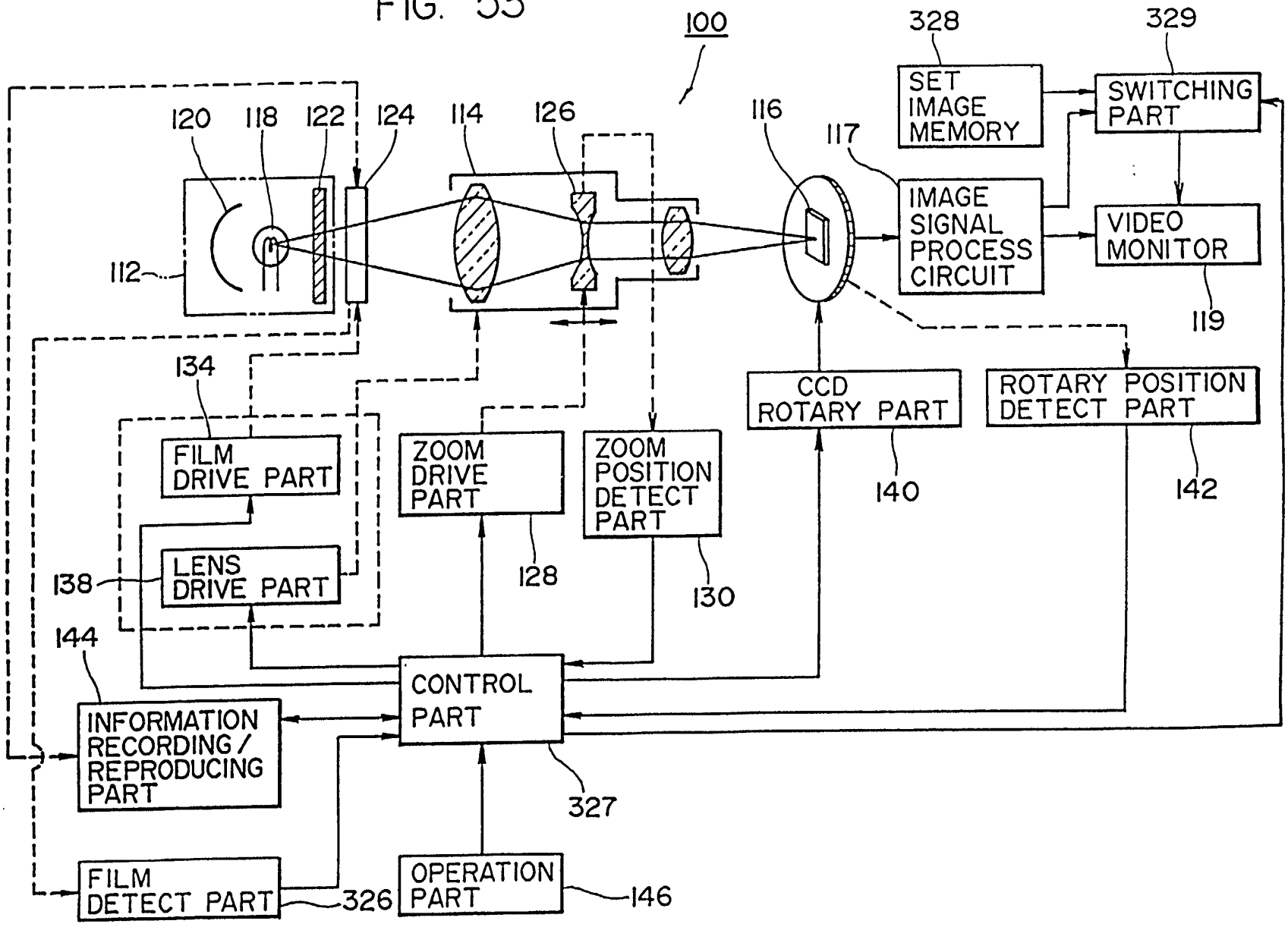

100
328
SET IMAGE MEMORY
329
SWITCHING PART
120
118
122
124
114
126
116
117
IMAGE SIGNAL PROCESS CIRCUIT
VIDEO MONITOR
112
119
134
CCD ROTARY PART
ROTARY POSITION DETECT PART
FILM DRIVE PART
ZOOM DRIVE PART
ZOOM POSITION DETECT PART
140
142
LENS DRIVE PART
138
128
130
144
CONTROL PART
INFORMATION RECORDING / REPRODUCING PART
327
FILM DETECT PART
326
OPERATION PART
146

FIG. 54

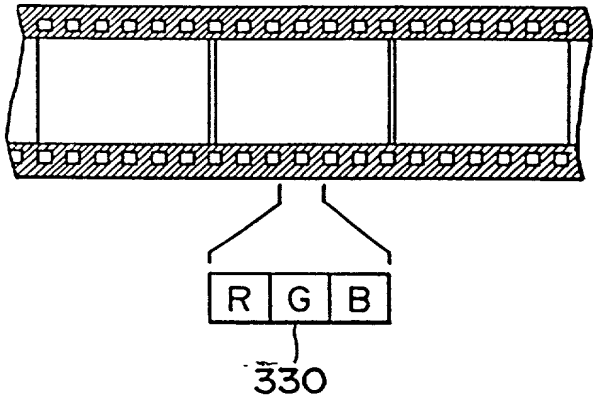


FIG. 55

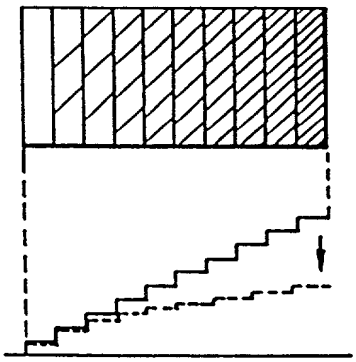


FIG. 56

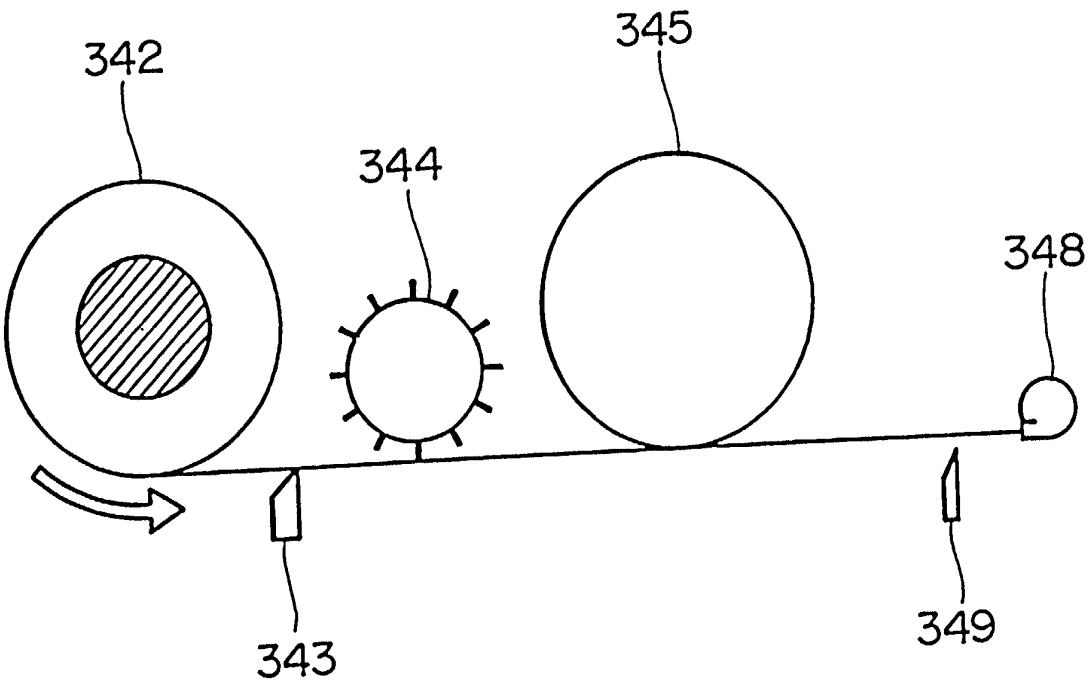


FIG. 57

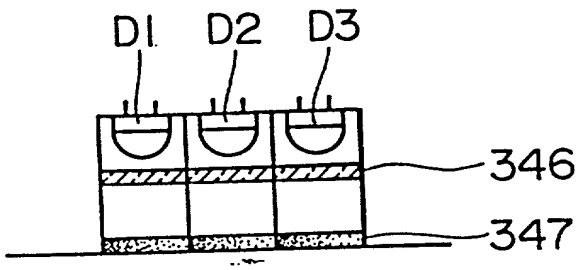


FIG. 58

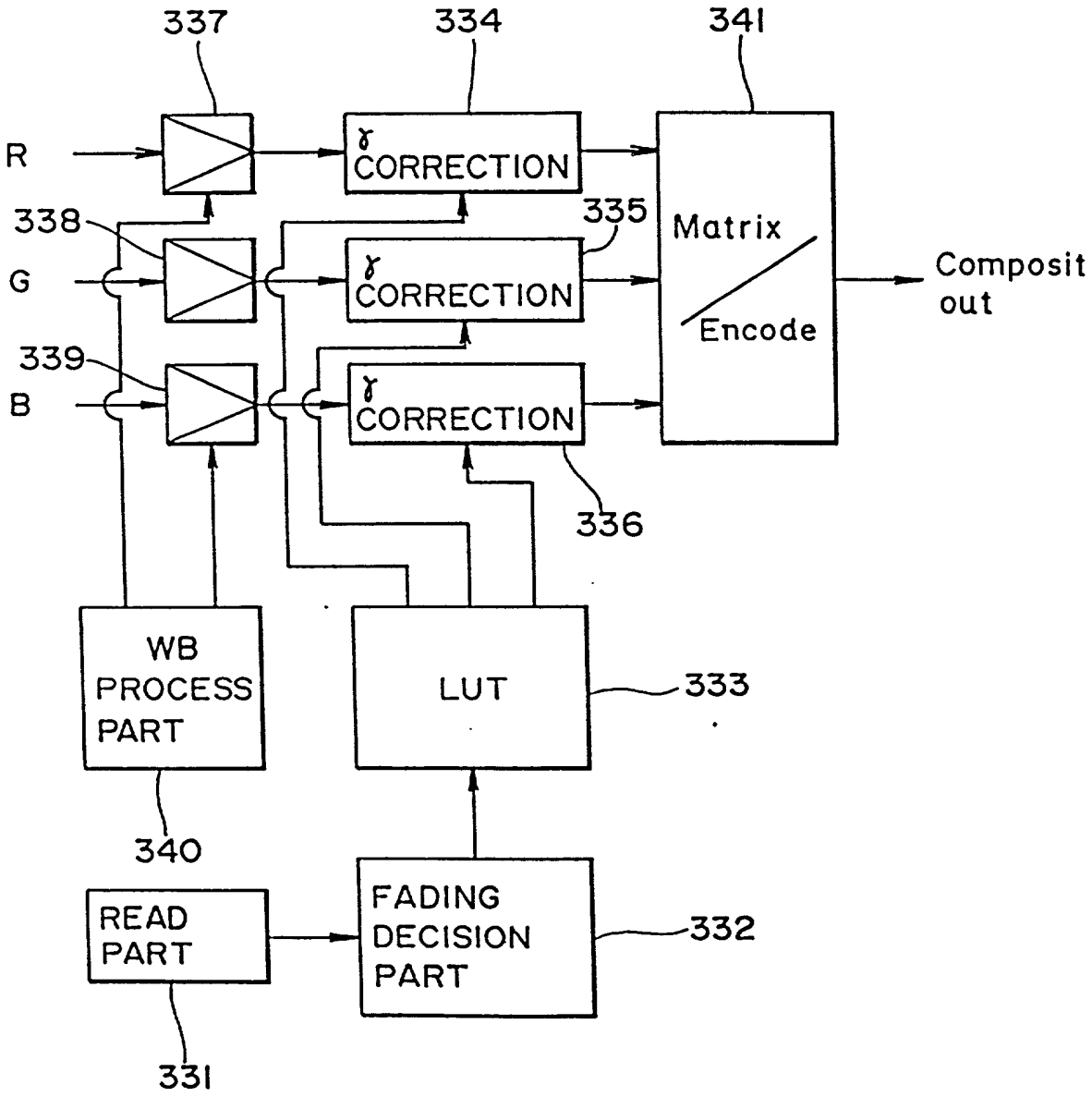

337
334
341
R
γ CORRECTION
338
335
Matrix
G
γ CORRECTION
Composit out
Encode
339
B
γ CORRECTION
336
WB PROCESS PART
LUT
333
340
READ PART
FADING DECISION PART
332
331

FIG. 59

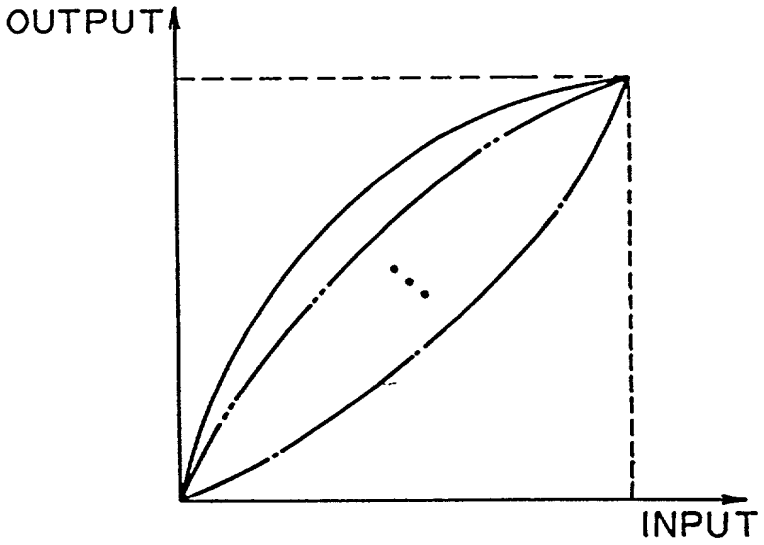


FIG. 60

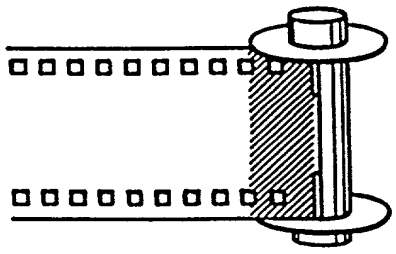


FIG. 61

PRIOR ART

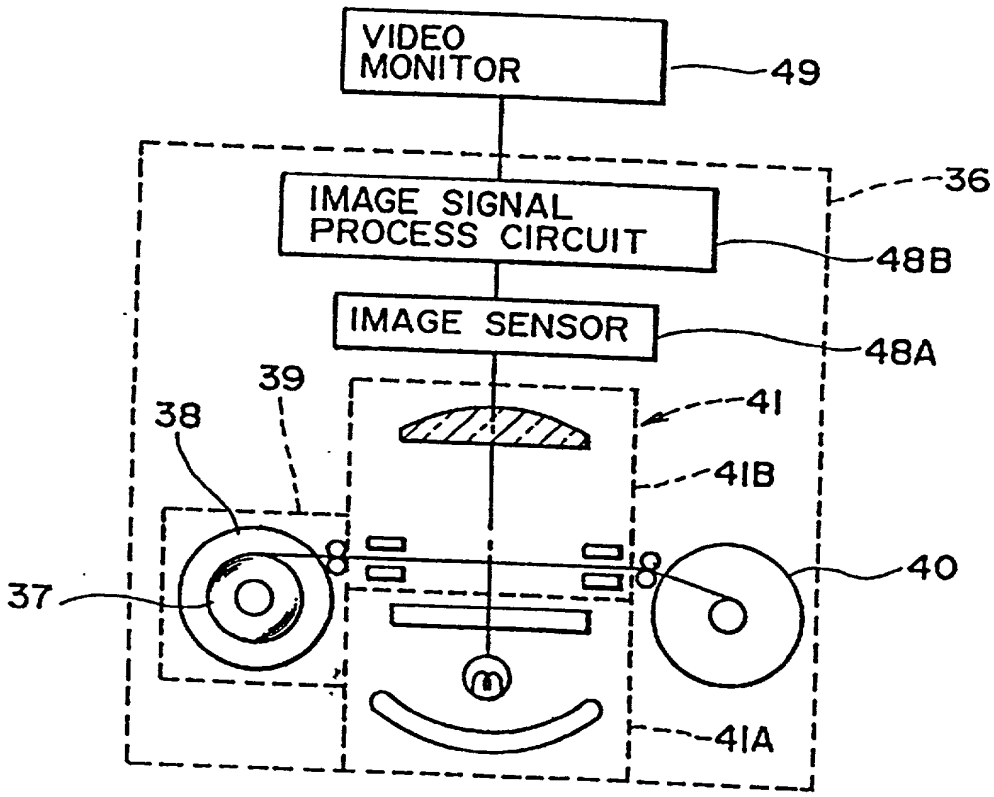
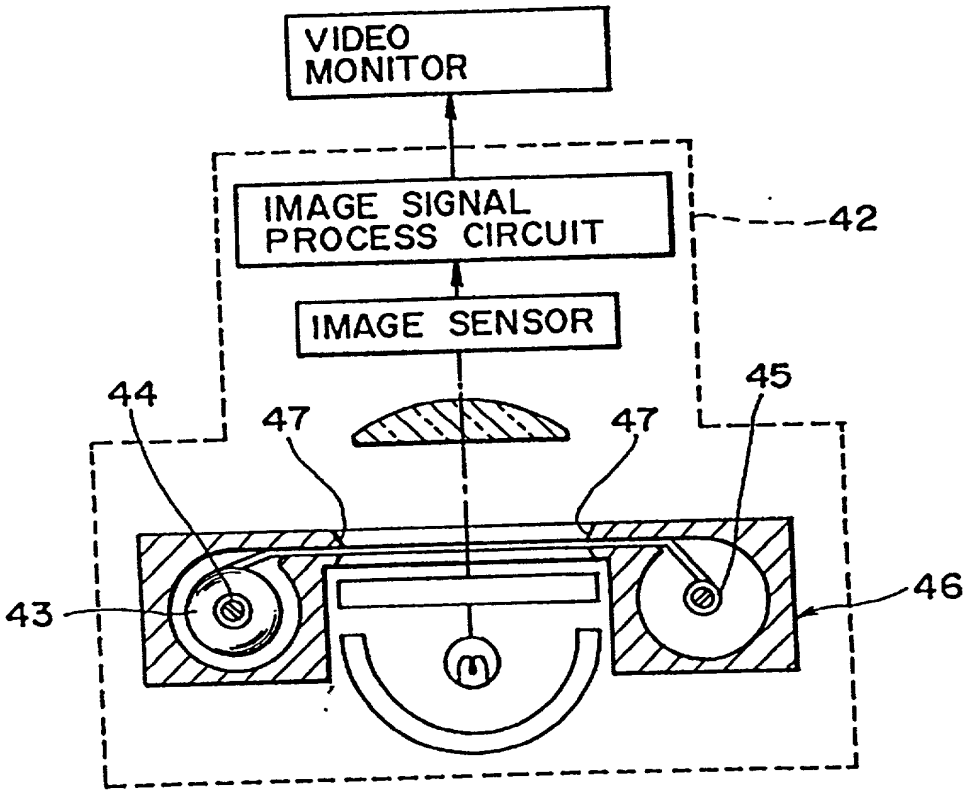


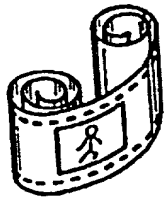
FIG. 62

PRIOR ART



PRIOR ART

FIG. 63(A)



PRIOR ART

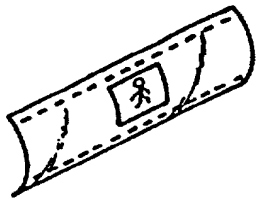



FIG. 63(B)